THE
AGRICULTURAL ADVISORY DEPARTMENT
IMPERIAL COLLEGE OF TROPICAL AGRICULTURE.

IMPERIAL BUREAU
12 OCT 1939
INSTITUTE

REPORT

OF THE

Agricultural Department

ST. KITTS-NEVIS

1938.

ISSUED BY
THE COMMISSIONER OF AGRICULTURE.

1939.

[Price Sixpence.]

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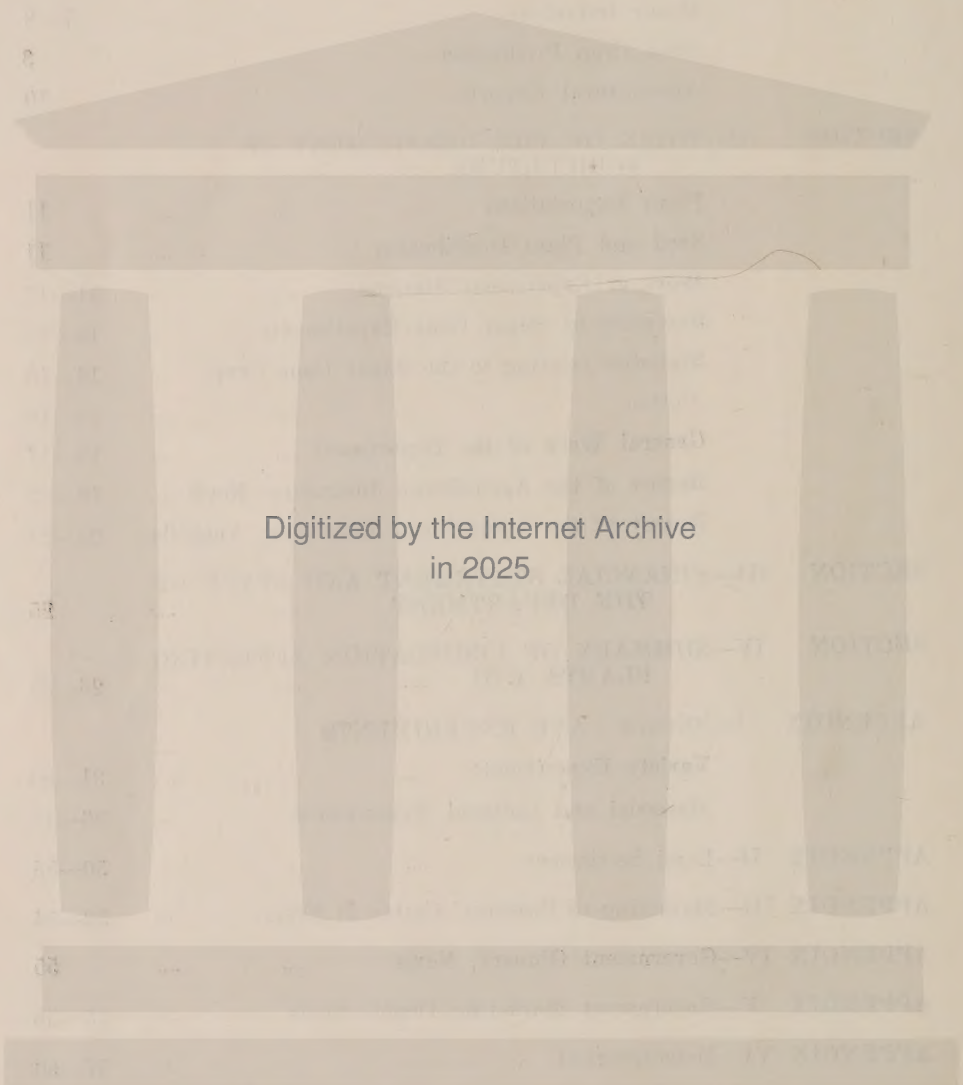
TABLE OF CONTENTS.

		Page
SECTION	I—AGRICULTURE IN THE PRESIDENCY	
	Weather Conditions	1
	Sugar	1—4
	Cotton	4—7
	Minor Industries	7—8
	Food Crop Production	8
	Agricultural Exports	10
SECTION	II—WORK OF THE DEPARTMENT OF AGRICULTURE	
	Plant Importations	11
	Seed and Plant Distribution	11
	Work at Experiment Stations	11—12
	Summary of Sugar Cane Experiments ..	13—14
	Statistics relating to the Sugar Cane Crop	14—15
	Cotton	15—16
	General Work of the Department	16—17
	Report of the Agricultural Instructor, Nevis	18—22
	Report of the Agricultural Instructor, Anguilla	23—24
SECTION	III—FINANCIAL STATEMENT AND STAFF OF THE DEPARTMENT	25
SECTION	IV—SUMMARY OF LEGISLATION AFFECTING PLANTS, ETC.	26—30
APPENDIX	I—SUGAR CANE EXPERIMENTS	
	Variety Experiments	31—36
	Manurial and Cultural Experiments	36—49
APPENDIX	II—Land Settlement	50—53
APPENDIX	III—Marketing of Peasants' Cotton in Nevis	53—54
APPENDIX	IV—Government Ginnery, Nevis	55
APPENDIX	V—Government Marketing Depot, Nevis	55—56
APPENDIX	VI—Meteorological	57—60



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Report of the Agricultural Department, St. Kitts-Nevis.

For the Year ended 31st December, 1938.

SECTION I.

AGRICULTURE IN THE PRESIDENCY.

WEATHER CONDITIONS.

In St. Kitts there was a severe drought during the first five months of the year. The rainfall for June, July and August was good but the weather went dry again in September. Ample rains fell in October, November and December. Weather conditions in Nevis and Anguilla were similar.

The dry weather in St. Kitts from January to May affected adversely both the cane and cotton crops. Owing to the exceptionally dry reaping season the old canes lost much weight and yields were considerably reduced. The young cane crop for 1939 suffered a serious set-back, especially the ratoons. Much difficulty was experienced in establishing the cotton crop. At the end of May the plants in nearly all fields were severely stunted and there was every appearance of a complete crop failure, but with subsequent rains the crop made a remarkable recovery.

The Nevis cotton crop, which is reaped in the early months of the year, was benefited by the prolonged dry spell from January to May, but other crops suffered.

Food crops in Anguilla were seriously affected by the prolonged drought and the people suffered serious hardships.

Details of weather statistics are given as an appendix to this report.

SUGAR.

St. Kitts.

As was expected from the dry weather in 1937 the output of sugar in 1938 fell far below that of the previous year. According to figures published by the St. Kitts (Basseterre) Sugar Factory Ltd., the total area harvested for the 1938 crop was 9,760 acres. This represents an increase of 700 acres over the area harvested in 1937 and 1,200 acres over that harvested in 1936.

Growers supplied 200,211 tons of cane to the St. Kitts (Basseterre) Sugar Factory as compared with 256,551 tons in 1937 and 201,623 tons in 1936. The average yield of cane per acre fell to 20.51 tons as against 28.41 tons in 1937 and 23.70 tons in 1936. The reduced yield once again clearly indicates the absolute dependence of the crop on an adequate and

well distributed rainfall. The variety B.2935 continued to prove itself a valuable asset to the estates in the dry areas of the island. The output of the St. Kitts (Basseterre) Sugar Factory was 27,935 tons grey crystals, being more than 6,000 tons less than that of 1937. The sugar exported amounted to 26,481 tons valued at £204,835 as against 33,074 valued at £319,104 in 1937. The English and Canadian markets purchased about equal quantities of sugar exports for the year. Preferences in these markets enabled the sugar to be sold at £9. 0. 8d. per ton f.o.b., which is 13s. 8d. below last year's price, but is about 4s. above the price received in 1935 and 1936. Contracting growers received a first payment of 14s. per ton and a deferred payment of 1s. 8.53d. per ton, making the price of canes 15s. 8.53d. as against 16s. 9d. in 1937 and 15s. in 1936. Approximately £5,800, or one-third of the deferred payment, was distributed to estates' labourers at the end of the year. The owners of estates have continued the practice, which was started by some owners in 1933, of distributing one-third of the deferred payment to their labourers. Owing to the fall in the price of sugar and the much smaller crop reaped the amount distributed as a bonus to labourers in 1938 is only about half of the amount paid to them in 1937.

Sugar production during the year was regulated in accordance with the terms of the recent International Sugar Agreement. The St. Kitts-Nevis quota for 1937–38 was 28,500 tons and the sugar exported 26,400 tons. The shortage in production was subsequently re-allocated to other Empire producers.

During the year sugar prices were considerably depressed. Early in February prices touched 5s. per cwt. but later recovered somewhat. The International Sugar Council met in April and it was decided that a 5 per cent. reduction of quotas was necessary if a serious excess of the free market requirements was to be avoided. This reduction was duly imposed. During the latter part of the year the recovery in prices was maintained. The International Sugar Agreement has not caused a spectacular rise in sugar values, but it probably prevented a serious slump.

The Leeward Islands' export quota for 1938–39 has been fixed at 51,250 tons (2,250 tons less than the quota for the previous year). Of this 28,500 tons have been allotted to St. Kitts-Nevis.

At the end of the year the sugar crop in St. Kitts for 1939 was estimated at 34,000 to 35,000 tons.

The production for the past ten years is shown in Table I.

TABLE I.

SUGAR—ST. KITTS.

Year.	Average rainfall for island previous year. Inches.	Acreage reaped. Acres.	*Tons of cane produced.	*Tons of cane per acre.	*Tons of sugar produced.	*Tons of sugar per acre.
1929	53.25	6,950	120,106	17.32	13,724	1.97
1930	52.55	6,883	150,737	21.98	18,680	2.71
1931	45.98	6,096	98,209	16.11	12,021	1.97
1932	57.60	6,537	164,259	25.13	19,969	3.05
1933	77.27	7,715	184,538	24.27	24,167	3.13
1934	63.97	7,630	200,211	26.23	28,320	3.62
1935	55.34	8,105	205,192	25.25	28,491	3.52
1936	48.89	8,508	201,633	23.70	28,174	3.29
1937	63.12	9,029	256,551	28.41	34,260	3.77
1938	44.78	9,760	200,210	20.51	27,935	2.82

Note:—The crop reaped in 1933 was seriously damaged by a gale in September, 1932, the loss being estimated at 25 per cent of the crop.

*Long tons.

According to the Customs returns the exports of sugar, molasses and syrup during the period 1929-1938, are as shown in Table II.

TABLE II.

SUGAR—EXPORTS AND VALUES.

Year	Sugar		Molasses		Syrup		Prices grey crystals f. o. b. per long ton
	Exports Long Tons	Value £	Exports Imperial gallons	Value £	Exports Imperial gallons	Value £	£ s. d.
1929	12,736	150,153	....	....	8,970	299	11 16 4
1930	17,637	178,654	....	....	7,877	263	10 6 2
1931	10,579	110,234	589,690	5,759	....	....	9 10 2
1932	19,327	187,347	459,404	1,197	250	5	9 17 9
1933	22,588	234,747	630,749	2,897	....	....	9 18 3
1934	27,415	252,986	688,896	1,353	20,547	765	9 3 5
1935	27,280	236,964	459,207	5,126	26,040	1,106	8 16 10
1936	26,892	236,959	520,910	6,562	77,079	5,094	8 16 4
1937	33,074	319,104	466,045	6,497	109,955	5,180	9 14 4
1938	26,447	204,479	511,287	5,188	89,541	3,582	9 0 8

Nevis.

In Nevis the peasants cultivated from 800 to 1,000 acres of sugar cane. Of the total production 2,784 tons were purchased by the St. Kitts (Basseterre) Sugar Factory Ltd., and about 4,000 tons by the Cane Garden (Co-operative) Sugar Factory for the manufacture of syrup. The remainder of the crop was used for the production of muscovado sugar.

The prices received by the growers for canes were as follows:—

Canes shipped to St. Kitts (on the pier)	....	11s. 3d. per ton
Canes sold to Hamilton Muscovado Works	....	11s. 6d. „ „
Canes sold to the Cane Garden Factory	....	12s. 0d. „ „

During the year the pier at Newcastle was extended and shipping facilities at this point are improved.

The following quantities of canes have been shipped from Nevis to St. Kitts during the past five years:

	Weights received at the Factory in St. Kitts.
1934	4,139 tons
1935	2,429 „
1936	1,065 „
1937	2,036 „
1938	2,784 „

The Agricultural and Commercial Society of the island has forwarded to Government a scheme for the extension of sugar cane cultivation and the erection of a small modern sugar factory to deal with the increased production. The proposals of the Society were laid before the members of the Royal Commission who visited the island in December.

INVESTIGATIONAL WORK.

During the year the Department continued to conduct experiments on behalf of the sugar industry in co-operation with the Sugar Cane Investigation Committee and thirty-nine experiments with a total of 1,489 plots were reaped. A summary of the results of these experiments is given in Section II of this report and the details will be found in Appendix I. Thirty-one new experiments were also laid down.

COTTON.

In Table III the acreage and production of Sea Island cotton for the ten-year period 1928-29 to 1937-38 are given. The acreage of cotton planted in the Presidency for the 1937-38 season was about 650 acres greater than the acreage planted for the previous season, the acreage in St. Kitts being increased by about 250 acres and the acreage in Nevis by 400 acres.

TABLE III.

COTTON.

Year.	Area planted in Sea Island Cotton. Acres.				Total Lint production in lbs.				Yield of Lint per acre in lbs.		
	St. Kitts.	Nevis.	Anguilla.	Total.	St. Kitts.	Nevis.	Anguilla.	Total.	St. Kitts.	Nevis.	Anguilla
1928-29	1,400	1,500	300	3,900	327,300	274,000	51,000	652,300	230	109	170
1929-30	2,200	2,500	300	4,200	397,763	80,000	27,000	504,763	180	40	90
1930-31	1,170	1,500	300	2,970	129,900	159,000	32,200	321,100	111	106	107
1931-32	200	250	218	668	35,140	23,737	26,141	85,018	176	95	120
1932-33	130	100	134	364	20,352	10,042	18,767	49,161	156	100	140
1933-34	253	600	280	1,133	59,129	47,677	34,881	141,687	234	80	124
1934-35	400	800	300	1,500	101,869	72,603	26,276	200,748	255	91	88
1935-36	1,030	1,857	400	3,287	235,353	219,216	30,471	485,040	228	118	76
1936-37	1,190	2,578	400	4,168	216,811	199,768	31,440	448,019	182	77	78
1937-38	1,440	2,986	400	4,826	385,130	375,145	23,309	783,584	267	126	58

The production in St. Kitts was larger than that of the previous year by 186,000 lb. and in Nevis by 175,000 lb. The Anguilla crop was smaller than that of the previous season.

The production of cotton in the Presidency for the 1937-38 season is shown in the following summary:

	St. Kitts		Nevis		Anguilla		Total	
	Bales	lb.	Bales	lb.	Bales	lb.	Bales	lb.
Clean lint	760	320,937	780	361,622	87	22,804	1,627	705,363
Stained lint	172	64,193	29	13,523	3	505	204	78,221
Total ...	932	385,130	809	375,145	90	23,309	1,831	783,584

The St. Kitts crop received a serious set back during the drought in the early part of the year and at the end of May it seemed that the crop would be a complete failure. With the rains in June the crop made a remarkable recovery and an excellent crop was reaped. Very high yields were obtained on some estates. The leaf worm (Alabama argillacea) was troublesome in certain districts and large quantities of insecticides had to be used for its control. The pink bollworm (Pectinophora gossypiella) did not make its appearance early in the season and the satisfactory production may in part be attributed to this fact. The percentage of stained cotton was however high as there were constant rains during the reaping season and the quality of the crop on the whole was not up to its usual standard. Early in the reaping season the largest ginnery on the island was destroyed by fire and in consequence some estates with limited storage space found it difficult to deal with the crop satisfactorily.

The Nevis crop was benefited by the very dry weather in January. February and March as conditions were unfavourable for the rapid multiplication of the pink bollworm and a severe early infestation by this pest did not develop.

In Anguilla the whole season was very unfavourable for the crop.

At the end of the year all stocks of Nevis clean cotton had been disposed of in the Liverpool market at 17d. to 19d. per lb. The stocks of St. Kitts cotton were sold at 17d.

According to the Customs returns the exports of cotton lint, cotton seed and cotton seed oil during the period 1929-1938 were as shown in Table IV.

TABLE IV.

COTTON—EXPORTS AND VALUES.

Year	Cotton Lint		Cotton Seed		Cotton Seed Oil		Cotton Lint St. Kitts c. i. f. per lb.
	Exports lb.	Value £	Exports Long tons	Value £	Exports Imp. gals.	Value £	s. d.
1929	690,068	66,407	383	1,317	....	....	2 0
1930	778,761	65,484	364	1,837	12,272	932	2 6½
1931	245,511	12,364	388	1,363	9,489	425	1 0 to 1 10
1932	127,444	5,961	35	290	2,657	224	10 to 1 2
1933	88,550	4,701	....	....	....	....	1 1
1934	166,910	7,324	....	....	7,298	442	1 3 to 1 4
1935	204,647	10,327	2	16	5,995	533	1 5 to 1 8
1936	508,295	33,885	142	601	7,987	765	1 6½ to 1 10½
1937	398,862	29,588	130	577	7,249	725	1 6 to 1 7
1938	729,753	45,193	264	846	5,382	553	1 5 to 1 7

ST. KITTS SEA ISLAND COTTON GROWERS' ASSOCIATION LTD.

Mr. A. M. Reid, O.B.E., President of the Association, attended the third Ordinary General Meeting of the West Indian Sea Island Cotton Association (Inc.) which was held in Trinidad in November, 1938.

The Agricultural Superintendent continued to perform the duties of Honorary Secretary and Treasurer of the Association during the year.

MINOR INDUSTRIES.

COCONUTS.

The exports of coconuts and copra from Nevis for the period 1929 to 1938 are given in Table V.

TABLE V.

COCONUTS—EXPORTS AND VALUES.

Year	Coconuts		Copra	
	Exports No.	Value £	Exports lb.	Value £
1929	1,668	10	....	....
1930	16,144	100	553	7
1931	43,900	256	....	....
1932	78,770	445	16,480	215
1933	56,953	208	23,520	98
1934	105,646	228	58,800	223
1935	95,157	215	8,440	26
1936	9,030	26	45,464	205
1937	7,868	16	82,320	425
1938	20,969	75	74,143	274

PROVISION AND MARKET GARDEN CROPS.

The year was very favourable for the production of ground provisions and these were very plentiful, especially sweet potatoes. Growers found it difficult to dispose of their produce at remunerative prices. Tomatoes were again grown by the peasants in Nevis for export to Canada and the following figures show the quantities exported during the period 1932-38.

			lb.	Value
1932	....	....	58,590	£524
1933	....	....	28,637	221
1934	....	....	14,000	105
1935	....	....	15,880	120
1936	....	....	14,560	108
1937	....	....	15,988	230
1938	....	....	58,420	445

LIVE STOCK.

The exports of live stock during the past ten years are given below:—

			Number	Value
1929	....	....	427	£ 770
1930	....	....	473	1,544
1931	....	....	796	3,107
1932	....	....	1,185	2,636
1933	....	....	971	2,325
1934	....	....	762	796
1935	....	....	751	925
1936	....	....	903	1,604
1937	....	....	1,730	2,258
1938	....	....	715	1,309

Hides and skins to the value of £230 were exported during the year.

For the improvement of dairy cattle in Nevis two three-quarter bred Holstein-Zebu bulls were imported by Government during the year.

No infectious diseases among animals were reported in 1938.

FOOD CROP PRODUCTION.

Fairly large quantities of ground provisions such as sweet potatoes, cassava, yams, eddoes, tannias etc. are produced for local consumption in both St. Kitts and Nevis and in years of good rainfall growers often find it difficult to dispose of their produce at profitable prices. Peas and beans are also produced and used extensively for food in the three islands of the Presidency.

The better organization of production of these food crops is receiving the consideration of the Department.

A moderate quantity of Indian Corn is at present grown by the peasants in Nevis and Anguilla as a food crop. In St. Kitts it is often cultivated on estates for feeding to stock. During the year the production of cornmeal on a small scale for local consumption was started by private enterprise in Nevis. A grinder and corn sheller, the property of Government, was loaned to the organizer of the scheme and Government has rendered other facilities in connection with the undertaking. The officers of the Department are taking an active interest in the development.

The following table showing the quantities and values of the more important foodstuffs imported during the past five years is of interest:

IMPORTS OF FOODSTUFFS.

Year	Cornmeal		Wheat Flour		Rice		Dried Fish		Bread and Bics.	
	Quan.	Value	Quan.	Value	Quan.	Value	Quan.	Value	Quan.	Value
	½ bags 98 lb.	£	½ bags 98 lb.	£	lbs.	£	lbs.	£	lbs.	£
1934	8,840	4,412	43,546	21,096	1,688,135	7,641	438,324	4,175	66,961	1,367
1935	9,306	4,833	45,982	23,082	1,750,755	7,927	482,730	4,430	76,801	1,462
1936	9,614	4,911	45,836	26,125	1,867,695	8,698	496,773	4,345	91,392	1,915
1937	7,140	4,783	43,442	25,887	2,167,244	9,774	428,003	3,250	100,479	2,029
1938	5,687	5,770	46,462	26,968	2,211,442	11,316	631,208	6,553	102,262	1,876

It will be seen that fairly large quantities of wheat flour, rice, dried fish and cornmeal are imported annually into the Presidency. Wheat flour and rice are very important articles of the diet of the inhabitants of the islands and it is not at all likely that the importations of flour and rice will be lessened by the production of more foodstuffs locally. Regarding importations of rice and bread and biscuits it is important to remember that for the past two or three years from 70 to 90 per cent of these importations have come from British Colonies in the Caribbean area.

AGRICULTURAL EXPORTS.

The following table shows the chief agricultural products exported during the years 1936, 1937 and 1938.

Article	1936.		1937.		1938.	
	Quantity	Value £	Quantity	Value £	Quantity	Value £
Sugar, cryst. .. .	26,892 long tons	236,959	33,074 long tons	319,104	26,481 long tons	204,835
Syrup and Molasses	597,989 gals.	11,656	576,000 gals.	11,677	600,828 gals.	8,770
Cotton, lint	508,295 lb.	33,885	398,862 lb.	29,588	729,753 lb.	45,193
Cotton seed	142 tons	601	130 tons	577	264 tons	846
Cotton seed oil	7,987 gals.	765	7,249 gals.	725	5,382 gals.	353
Coconuts	9,030	26	7,868	16	20,969	75
Copra .. .	45,464 lb.	205	82,320 lb.	425	74,143 lb.	274
Salt	3,484 tons	3,173	2,519 tons	2,968	3,609 tons	8,240
Tomatoes .. .	14,560 lb.	108	15,988 lb.	230	58,420 lb.	445
Vegetables	....	356	....	521	....	360
Fruit	....	61	....	123	....	22
Sweet Potatoes	7,750 lb.	22	1,465 lb.	6	32,000 lb.	40
Tamarinds	....	13	....	51	6,800 lb.	9
Hides and Skins	....	333	....	276	....	230
Horses	12	80	....	180	27	183
Mules	40	536	34	290	51	269
Asses	3	2	4	3	8	8
Cattle	96	406	286	1,031	216	660
Sheep	547	460	791	395	232	93
Goats	151	75	338	168	84	28
Swine	54	45	256	191	97	68
Total Exports	....	£289,767		£368,555	....	£266,001

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

PLANT IMPORTATIONS.

During the year the following plants and seeds were imported:—

Cotton Seed	4 bags from Montserrat.
Onion Seed	50 lb. from Teneriffe.
Cauliflower Seed	4 lb. from India through the Commissioner of Agriculture.
Other vegetable seeds	151 lb. from U.S.A.
Maize	600 lb. from Trinidad through the Commissioner of Agriculture.
Blackeye peas	300 lb. from Trinidad through the Commissioner of Agriculture.
Beans (Varieties U.S. 1 and U.S.5)	Small quantities from the U.S. Department of Agriculture for trial.
Sweet potato tubers	25 tubers of nine new Barbados seedlings from the Plant Quarantine Station, Trinidad.

SEED AND PLANT DISTRIBUTION.

During the year the following planting material was distributed from the nurseries in St. Kitts and Nevis:—

Plants.

Ornamental and shade trees	395
Grafted Mangoes (Julie)	45
Budded Citrus	14
Avocado Pear (Pollock)	7
Pineapple slips	33
Miscellaneous fruit trees	18

Seeds, Seedlings and Cuttings.

Sugar cane, cuttings	621,426
Onion seedlings	431,700
Tomato seedlings	626,784
Other vegetable seedlings	10,000
Cotton seed, lb.	54,470
Yams, lb.	130
Maize, lb.	20
Pease and Beans, lb.	40

WORK AT THE EXPERIMENT STATIONS.

Sugar Cane.

St. Kitts. The half acre plot of the variety B.3439 was carried on as first ratoons for the purpose of obtaining a further supply of plants of this variety for distribution. The canes suffered severely during the long spell of very dry weather from February to May but they made a remarkable recovery with the rains and at the end of the year the plot looked in excellent condition and an adequate supply of plants was assured.

The variety B.3439 has proved very satisfactory in recent trials and has maintained its early promise of being a useful cane for the dry areas of the

island. Unfortunately it arrows very freely and on one or two estates it was turned out of root during high winds and a moderately heavy fall of rain. It is now established on a semi-commercial scale in all districts of the island and its future behaviour will be watched with interest.

Nevis. Plots of the varieties B.2935 and B.3439 were grown as plant canes to supply planting material for peasant growers.

Fruit, Vegetables and Ground Provision Crops.

Mangoes. The Julie mango trees at the Stations in St. Kitts and Nevis continue to make good growth and adequate material is available for propagating plants for distribution. It has been found that the propagation of mango plants by approach grafting is by far the simplest method under conditions in St. Kitts. The percentage of failures is low and the plants generally make satisfactory growth on being planted out. At the Nevis station the bottle grafting of the mango is carried out successfully.

Citrus Fruit. There is only a small demand for citrus plants in St. Kitts and Nevis. Budwood required for propagating plants is available from orange and grapefruit trees at the station in St. Kitts.

Avocado Pears. There are trees of the Pollock variety at the St. Kitts station and from these plants are propagated for distribution. The seedling tree of the Nabal variety has not yet flowered and it is some seven years old. A seed of this variety was given to the Department by Dr. Fairchild some years ago.

Onions. A very large number of onion seedlings were grown at the station in St. Kitts and Nevis from seed imported from Teneriffe. These were readily sold in both islands.

Other Vegetables. Seedlings of cauliflower, tomato, cabbage, lettuce, kohlrabi and egg plant were also sold at both stations.

Ground Provision Crops. Plots of varieties of sweet potatoes yam and cassava were grown and cuttings distributed. The following are the varieties of yam and sweet potato which are grown at the experimental station in St. Kitts:—

Yam. Oriental, Lisbon, Langy and Horn.

Sweet Potato. Sister Simmons, Never Miss, Statia, Three Months, Sorry for the Poor, B.5, V.52 and Black Rock. The following Barbados seedlings were recently introduced through the Plant Quarantine Station at Trinidad:—B.33, B.64, B.44, B.62, B.26, B.29, B.52, B.20, and B.32.

Experimental Work.

Sugar Cane. Experimental work with this crop is carried out by the Department in co-operation with the Sugar Cane Investigation Committee and all the experiments are conducted on the sugar estates. The experimental scheme is arranged each year by Mr. P. E. Turner, M.Sc., F.I.C., Adviser in Sugar Cane Experiments to the Commissioner of Agriculture. During the year thirty-nine experiments with a total of 1,489 plots were reaped. A summary of the results of these experiments is given below and details as to sites, lay out of experiments and yield data are given in Appendix I attached to this report. Thirty-one new experiments were laid down.

SUMMARY OF RESULTS OF SUGAR CANE EXPERIMENTS

REAPED IN 1938.

Variety Experiments.

Dry Areas. As plant canes and first ratoons the variety B.2935 proved itself superior to the varieties B.726, S.C. 12/4 and P.O.J.2878. The total yield of B.2935 as plant canes and first ratoons exceeded the yields of the other varieties by 10 to 15 tons of cane per acre. The variety yielded approximately 1½ tons more sugar per acre than the variety S.C.12/4.

Intermediate Areas. In areas of intermediate rainfall B. 2935 gave much higher yields of cane per acre than the varieties B.726 and B.H.10(12).

Wet Areas. In the wet areas the variety B.H.10(12) gave significantly larger total yields of cane and sugar than B.726.

The variety B.2935 germinates readily, is a heavy stooler and produces very thick and long individual canes. It should not be planted too early as it has shown a tendency to rot when planted early in certain localities.

Leaf markings of gumming disease have been observed on the leaves of this variety.

Manurial and Other Experiments.

TIME OF PLANTING ON LOWER LANDS.

Dry Areas.

The early October planting gave a significantly smaller yield of cane than the late plantings. There was nothing to choose between the yields of cane given by the November, December, January or March plantings. No gain in yield resulted from planting later than November in spite of the unusually long spell of dry weather which persisted from February to July in 1937. Under more normal weather conditions November plantings would probably have given the largest yield.

Wet Areas.

Time of planting had little effect on yield under the conditions which obtained.

No gain resulted from planting later than August in spite of the unusually long spell of dry weather which persisted in the experimental area from March to July in 1937. Under more normal weather conditions the August and September plantings would probably have given the largest yields.

Distance of Planting.

Dry Areas.

In a comparison of spacings of 3 feet and 4½ feet in the row the closer spacing gave the larger yield of plant canes and the wider spacing the larger yield of ratoons. The total yields are significantly in favour of the closer spacing. Optimum spacing distance is dependent on rainfall but it appears that in the dry areas the most satisfactory spacing is 4½ feet by 4 feet.

Wet Areas.

In this experiment the yields of plant canes and ratoons were larger for the closer than the wider spacing. In the wet areas spacing distance should not exceed 4½ feet by 3 feet.

Cultural.

No differences in the yield of second ratoon canes were recorded between cross holing and not cross holing of the land before planting. Similarly the opening up of the tarish before planting resulted in no increase in yield of the second ratoon canes.

No gain in yield resulted from the sub-soiling of plant canes. The cultivation of first and second ratoons gave no increase in yield, thereby again confirming the results of previous experiments conducted by the Department.

Mulching.

Mulching with trash.

An increase of about 5½ tons cane per acre resulted from the use of a trash mulch on plant canes in a dry area.

Mulching with megass.

In a dry area the immediate and residual gains from mulching with megass amounted to 5.57 tons cane per acre. The gain of plant canes was obtained under conditions of high rainfall and the gain of ratoons under conditions of low rainfall.

Size of dressing of Pen Manure.

A total gain in yield from plant and first ratoon canes of 4 tons of cane per acre was given by applications of 10 tons and 20 tons of pen manure to the acre and a gain of 7 tons by an application of 30 tons pen manure. The total gain from the dressing of 30 tons of pen manure was less than twice the total gain from the dressing of 10 tons. In general greater benefit is derived from dividing the supply of pen manure equally on the total area to be replanted than from giving very large dressings to a portion of this area.

Potash.

The results of experiments with applications of potash this year have again supported the conclusions recorded in other reports, viz., that a paying increase in yield is obtained when potash is used on unpenmanured soils especially on those of the upper lands. Where dressings of pen manure of moderately good quality are used the application of potash to the plant and first ratoon canes does not result in a paying increase of yield.

Phosphate.

On the estate where experiments with superphosphate of lime have been conducted no significant increase from the use of phosphate has been recorded.

STATISTICS RELATING TO THE SUGAR CANE CROP.

The following is a summary of certain statistics collected in 1938 and relates to the crop which was planted for reaping in 1939.

Percentage acreages of different varieties.

B.H.10(12)	61.6 per cent
B.2935	31.5
P.O.J.2878	2.4
S.C.12/4	0.3
G.119	0.3
B.726	0.2
B.3439	0.1
Mixed	3.5
	99.9

The above figures represent percentages of the reported acreage viz. 8,642 acres.

The figures show that the varieties B.H.10(12) and B.2935 now occupy most of the sugar cane area. The variety S.C.12/4 has been almost completely replaced by B.2935 and this has resulted in considerable increases in yield of cane per acre of fields in the dry areas of the island.

Yield data of the varieties cannot be given as such records are kept by only a few estates.

Percentage acreages of plant and ratoon canes.

Plant Canes	....	49.6 per cent
First ratoon canes	....	37.2 „ „
Second „ „	....	11.3 „ „
Third „ „	....	1.8 „ „
		99.9

These figures indicate that the acreages under plant and ratoon canes in St. Kitts are about equal. In the wet areas of the island however there is a considerably higher percentage of ratoon canes than in the dry areas.

Quantities of Artificial Manures and Crushed Limestone Imported into St. Kitts During the Five Year Period 1934 to 1938.

LONG TONS.

Year	Sulphate of Ammonia	Nitrate of Soda	Muriate of Potash	Super-phosphate of Lime	Mixed Manures (complete)	Humber Compound Fish Manure	Crushed Limestone
1934	1,118	....	116	....	64	16	....
1935	1,652	....	235	66	17	55	....
1936	1,120	....	273	203	96	45	258
1937	1,276	....	481	250	28	85	222
1938	1,959	3	487	182	....	64	420

According to the Customs returns the value of these imports in 1938 was £19,019.

COTTON.

Manurial Experiment. A manurial experiment with sea island cotton was carried out at the Experiment Station in Nevis. The experiment was planned by the Cotton Adviser to the Commissioner of Agriculture and was laid out and planted in September. The results will be published in next year's report.

Control of the cotton leaf worm by spraying. The use of a lead arsenate spray for the control of the cotton leaf worm (Alabama argillacea), instead of the customary dusting with a Paris Green-Lime mixture, was tried by the Department on a plot of cotton at the Experiment Station in St. Kitts and on a portion of a field on one estate. Spraying for the control of this insect has been advocated by the Cotton Pests Entomologist as being a cheaper and more efficient method of control than dusting. The experiments demonstrated that spraying is a cheap and efficient method of control but that its adoption on a large scale might not be feasible in all cases. In Nevis the absence of suitably located water supplies for the preparation of the spraying mixture would probably cause difficulties. In St. Kitts the gangs now used on the estates for

applying the dust would have to be replaced by men trained to use the sprayers and tanks for conveying spraying mixture from field to field would have to be provided.

For the successful control of Alabama argillacea the dust or spray has to be applied with as little delay as possible when an attack has been observed and where large acreages of cotton are planted on estates a considerable number of sprayers would be required to deal adequately with the situation once the attack had become general.

Maize. Selection work with this crop is being carried on at the Experiment Station in St. Kitts and some progress has been made with material received from Trinidad some years ago.

Egg-Plant. Selection is being carried out with this crop and satisfactory results are being obtained.

Composting. At the Experimental Station in St. Kitts fallen leaves, weeds, crop residues together with a certain amount of animal manure and urine were composted in a shallow pit. Sufficient compost was not produced for plot trials but the product has been very valuable for nursery work.

One trial was made on the production of compost from cane megass but the material proved difficult to break down and the product was not entirely satisfactory. In this case the material was made up in a heap and dressings of sulphate of ammonia applied. Further trials are being made.

Soil Erosion and Soil Conservation. During the year arrangements were made to lay out a demonstration plot on the sloping lands of the Hamilton Land Settlement in Nevis to demonstrate methods of checking erosion. This work could not be undertaken in 1938 owing to lack of staff but it will be proceeded with as soon as possible. On this estate, and on most lands in Nevis the obvious method to adopt to check soil erosion is to make use of the stones in the fields for building protecting walls across the contours. The officers of the Department are advising peasants to make use of the stones in this way instead of piling them in heaps as is generally done. No experimental work has been undertaken in St. Kitts yet but the importance of extending the use of methods of cultivation, especially on steeply sloping lands, to check soil erosion was brought to the attention of landowners in an article on the subject contributed to the local press by the Agricultural Superintendent.

GENERAL WORK OF THE DEPARTMENT.

Cotton Seed for Planting.

To maintain the quality of the Montserrat type of cotton which is now cultivated in the three islands of the Presidency a quantity of pedigree seed is supplied each year by the cotton station in Montserrat. Through a misunderstanding of the arrangements made by the Commissioner of Agriculture for a supply of this seed for St. Kitts the seed multiplication plot at La Guerite was planted in 1938 with seed obtained from the 1937 crop produced at the station in St. Kitts. The present arrangement is that multiplication plots are grown in St. Kitts, Nevis and Anguilla from the seed supplied each year by the Montserrat station. In St. Kitts and Nevis these plots are grown at the Experiment Stations by the Department, but in Anguilla Mr. Carter Rey co-operates with the Department and cultivates the plot on one of his estates. Seed fields are grown on estates with the seed produced on these plots and a supply of good planting seed is obtained thereby for planting the crops of the three islands in the following year. Cotton seed for planting is hand picked before distribution.

Cleaning up of Cotton Fields and Enforcement of Close Season Regulations.

The cotton inspectors in the Presidency are under the control of the Department and special efforts are made to have the regulations for the control of cotton pests rigidly enforced, as recommended by the Cotton Pests Entomologist.

Marketing of Peasants' Cotton in Nevis.

This is an important function of the Department in Nevis and is under the direct control of the Agricultural Instructor. For the 1937-38 season 743,054 lbs. clean seed cotton were purchased at the Government Ginnery as against 217,104 lbs. in 1936-37 and 388,384 lbs. in 1935-36. An advance of 4d. per lb. was made on clean seed cotton and ½d. per lb. on stained cotton. A bonus of ½d. per lb. was paid on clean seed cotton making the total price 4½d. per lb. The total amount paid by Government to growers for clean seed cotton received at the ginnery was £13,927. 9. 9. Details will be found in Appendix III attached to this report.

Marketing of Vegetables Produced by Peasants in Nevis.

Vegetables produced by the peasants in Nevis for export are marketed through the Government Marketing Depot. The Depot is under the control of the Agricultural Instructor. In recent years only tomatoes for export to Canada have been handled at the Depot. The export of egg-plants, stringless beans and sweet potatoes to Canada has in most instances not proved a financial success. In 1938, 58,420 lbs. of tomatoes were exported to Canada as against 15,988 lbs. in 1937 and 14,560 lbs. in 1936. Details of this work will be found in Appendix V.

Land Settlement.

A detailed account of the progress of the two settlements in Nevis during the year under review is given in Appendix II. Early in the year the Department was placed in full control of these settlements and the Agricultural Assistant, who was transferred to Nevis, was made directly responsible for their development.

The contract of sale of allotments was amended to provide for the control of work on the plots by the Department for a period of years, the period of repayment of instalments was extended from ten to fifteen years and the water supply for stock and pasturage facilities on the Low Ground settlement were improved during the year.

A detailed account of the settlements with recommendations for their improvement was published in the annual report of the Department for 1935.

A definite policy for the establishment of land settlement in St. Kitts was agreed upon by Government during the year.

Chemical Activities.

Samples of soil were examined in the chemical laboratory on behalf of sugar estates and advice was given on the results of analyses.

Other samples examined in the laboratory included milk, liquors, cane juices, lime, manures, kerosene oil (flash point) etc.

Agricultural Education.

Lectures in Soil Science and Botany were given to the senior class from the Grammar School. The lectures are given twice a week at the Experiment Station and the work covers the syllabus of the Cambridge School Certificate examination in General Science.

Agricultural Show.

An Agricultural and Industrial Exhibition was held in Nevis under the auspices of the Nevis Agricultural and Commercial Society.

OFFICIAL VISITS.

Visits were paid to the Experiment Station by Mr. G. A. Jones, Dip. Agric., C.M.G., Commissioner of Agriculture, Mr. C. C. Skeete, B.A., Assistant Commissioner of Agriculture, Mr. P. E. Turner, M.Sc., F.I.C., Adviser in Sugar Cane Experiments to the Commissioner of Agriculture, Mr. J. B. Hutchinson, M.A., Cotton Adviser to the Commissioner of Agriculture and Professor F. L. Engledow, M.A., C.B.E., Member of the Royal Commission.

Report of the Agricultural Instructor, Nevis.

SECTION II.

WEATHER CONDITIONS.

The rainfall at the Experiment Station for the year was 58.87 inches, which was 12.56 inches more than that of 1937. Rain fell on 125 days during the year and the heaviest fall recorded for any one day was 4.75 inches which occurred on November 14th. The rainfall was fairly well distributed during the year.

SUGAR.

The total acreage under sugar cane was about 1,000 acres. Reaping of the crop began in February, and the crop was disposed of as usual. The total quantity of canes sold was as follows:—

St. Kitts (Basseterre) Factory	....	....	2,925	tons
Cane Garden Factory	....	....	5,000	„

The total quantity of muscovado sugar manufactured on the island was about 200 tons from approximately 5,000 tons of canes. The average yield of canes per acre was about 10 tons. The price paid for canes at the weighbridges at Charlestown and Newcastle for shipment to the Basseterre Factory was at the rate of 11/3 per ton—10/6 first payment and a deferred payment of 9d. per ton, and that paid at the Cane Garden Factory was 12/- per ton.

The canes sold to the Cane Garden Factory were made into syrup for the Canadian market, and the total quantity of syrup shipped was 2,050 barrels containing 107,449 wine gallons.

There has been a reduction in the acreage around the New Castle district, but there has been a compensating increase in the Gingerland district, so that the acreage under canes for the 1939 crop is about the same as that for last year, i.e. about 1,000 acres. The weather during the first part of the year was fairly dry and the crop in some places was badly affected. From June the weather was much more favourable. Most of the fields recovered from the effects of the drought and made rapid growth. It is likely that the yield will be better than that obtained last year.

Planting of the 1940 crop was started in November and it is not likely that there will be an increase in the acreage, especially in the Gingerland district, as there is some uncertainty as to the disposal of canes at Cane Garden.

The matter of a central Sugar Factory for the island was stressed before the Royal Commission which visited the island from December 25th to 28th.

Pests and Diseases.

The crop was not seriously affected by any pests or diseases during the year. The attacks of the small moth borer this year were particularly slight, but indications of gumming disease on B.2935 were observed.

COTTON.

The remainder of the 1936/37 crop in the United Kingdom was sold during the latter part of the year at 1/5 per lb. The 1937/38 crop met with a very favourable reaping season and the entire crop was reaped by the end of May, 1938.

The total production was 361,622 lb. of clean lint and 13,523 lb. of stained from 2,986 acres, being at the rate of 126 lb. of lint per acre—121 lb. of clean and 5 lb. of stained.

Of the total crop 210,872 lb. was marketed by the Government. The whole of the crop marketed by the Government was held on the island until market conditions improved around October when that held in the United Kingdom was sold.

The crop held on the island was shipped on November 5th, and before it arrived on the market in the United Kingdom, an offer of 1/7 per lb. (provided it was of the same quality as the 1937 crop) was made and accepted.

The matter of growing the Montserrat type of cotton in Nevis was for some time under discussion. This type of cotton was grown at St. Kitts on certain estates and the results were so satisfactory that the seed was used for general planting at St. Kitts and it was felt that it was almost impossible to maintain a pure strain of cotton other than the Montserrat strain in Nevis if this type were used for general planting in St. Kitts.

It was understood that while the yield of seed cotton per acre from the Montserrat cotton was about the same as that from the St. Kitts finer type grown under favourable conditions, the yield from the Montserrat cotton generally was much higher, and the percentage of lint to seed 32% as compared with 24% for the St. Kitts type.

It was also understood that there was a more ready sale of the Montserrat type of cotton than there was for the finer types such as that usually grown at St. Vincent, St. Kitts and Nevis, and that the market for the finer types was limited.

The matter was discussed at some length at a meeting of the Agricultural and Commercial Society held on April 8th, 1937 and the following Resolution was passed by the majority:—

> "That the Montserrat strain of cotton be introduced in Nevis by progressive measures—such measures to be decided on by the Agricultural Department."

Arrangements were made for the growing of field plots of about 150 acres of the Montserrat strain at Round Hill, Eden Brown and Powells Estates. The seed was obtained from St. Kitts. The germination was good and the plants grew vigorously, and the bearing was satisfactory. Although the average yield of seed cotton per acre (Round Hill 572 lb., Eden Brown 600 lb., Powells 800 lb.) was not very much in excess of that obtained from the ordinary type, it was, however felt that the type was very prolific.

The seed cotton ginned very readily and gave an average of 31.9% of lint at the Government Ginnery and 30% at the Fothergills Ginnery, as against 28.6 for the ordinary Nevis strain.

The whole of the 1938/39 crop was planted in seed of the Montserrat type. Planting began on September 16th, and the seed germinated well. The crop met very favourable weather and made rapid growth.

There was not the usual early attack of the leaf worm, but during the month of December this pest became very troublesome.

Pests and Diseases.

The situation relating to the Pink Boll Worm appears to be improving. There has not been that heavy infestation during the early part of the bolling season, and it is hoped that a severe attack will not develop later.

Special efforts were made to carry out as far as possible the measures recommended by Mr. Squire for the control of the Pink Boll Worm. Instead of the four part-time assistant Cotton Inspectors, two whole-time Assistant Cotton Inspectors were appointed two months before the close season began. The Cotton Inspector and the Assistants were instructed to devote their time before the close season to supervising and assisting the growers in having their plots properly cleaned up for the close season, and also to see to the proper disposal of all cotton refuse which may accumulate around cotton houses and growers' homes where cleaning of cotton had been carried out. The aid of the Sanitary Officers was also solicited in this latter measure.

The close season was extended for two weeks more, making the close season three months, and the Assistant Inspectors were retained for two weeks after the close season to allow for a final check up of conditions.

The cotton leaf worm (Alabama argillacea) was not so severe in its attack this season, nor was the crop attacked at so early a stage as it was during the past couple of years. In December, however, the attack became more severe in some places, but not very much damage was done as every effort was made to keep the pest under control.

This year the peasants were again allowed a credit of Paris Green and lime by the Government, and 160 peasants availed themselves of this facility.

The total quantity of Paris Green and lime supplied from the Station was 1,337 lb. and 60 bags respectively.

The cotton stainer was not so troublesome during the season.

Visits were paid to the ginneries in connection with the daily fumigation of cotton seed, and all cotton seed except that for planting was properly disposed of by August 31st, in accordance with regulations.

MINOR INDUSTRIES.

COCO-NUTS.

The coconut plantations continue healthy, but production appears to be falling off. At Pinneys the total production of nuts for the year was 353,313, and at Paradise 89,669.

The greater part of the crop at Pinneys and Paradise was made into copra, and the total quantity shipped was 33 tons.

LIVESTOCK.

There were no outbreaks of any serious disease during the year, and as weather conditions were favourable, there was no serious lack of water or pasture. Stock raising, however, continues to decline on account of the limited market for beef and draught-cattle.

The two pure-bred Zebu bulls are still owned by the Government but the older animal is now aged and quite unfit for service. The younger is still on service at Pinneys Estate.

Two three-quarter bred Holstein-Zebu bulls were imported by the Government during the year. The animals are in good health and condition, but are not yet put on full service. One is stationed at the Experiment Station and the other at the Low Ground Settlement.

GROUND PROVISIONS.

The usual ground provisions such as sweet potatoes, yams, cassava, Indian corn, peas and beans were grown during the year, and the yields on the whole

were satisfactory. Planting material of the best varieties of the above were supplied to growers at the Station.

The acreage planted in tomatoes was about 40 acres. Planting began in September, and the crop on the whole did fairly well, except at certain places where it was affected by the excessively wet weather in October.

The total quantity of tomatoes shipped was 2,862 crates—2,262 to St. John and 600 to Halifax. A fair proportion of the crop was also disposed of in the local market.

The onion crop grown from 35 lb. of seed imported from Teneriffe turned out fairly well and was all sold in the local market.

Pests.

The green bug was more plentiful this season than it had been for the past two seasons and accounted for a fair amount of damage to the crop. The cut worm (Prodenia) was also very troublesome.

EXPERIMENT STATION.

The hedges have all been trimmed and kept in good order. In the nursery the raising of ornamental plants and fruit trees was continued.

Experiments with economic and food crops were carried out at the Station and seeds and cuttings of the varieties giving the best results were distributed to growers.

THE DEMONSTRATION PLOT.

Crops such as sugar cane, cotton, ground provisions and vegetables are grown on this plot with the object of providing a larger supply of planting material to meet the growing demands and also to demonstrate the correct methods of cultivation. Accounts showing the cost of the various operations in connection with each crop are kept and also a record of the yields obtained.

When peasants visit the Station their attention is drawn to these plots.

VEGETABLE NURSERY.

The nursery for raising vegetable seedlings was continued and seedlings from 28lb. of tomato seed and 35 lb. of onion seed were distributed from the station during the year. Cabbage and other vegetable seedlings were also distributed.

PLANT DISTRIBUTION.

Ornamental plants and Shade trees	160
Fruit trees	18
Cane plants	128,110
Sweet potato cuttings	3,650
Cassava cuttings	820
Selected cotton seed, lb.	53,070
Yams, lb.	130
Seed corn, lb.	20
Peas and beans, lb.	40
Tomato seedlings	325,730
Onion seedlings	394,950
Egg plant	973
Cabbage	7,262
Kohl Rabi	220
Beet	150
Cauliflower	825
Pine Apple slips	27

AGRICULTURAL EDUCATION.

School Gardens. There is no improvement with regard to work on the school gardens, and at many of the schools there is no school garden. In an agricultural community where fully 60% of the children in later life will be dependent on agriculture for a livelihood, it would appear that the omission of instruction in even the elementary principles of agriculture as part of their early training, creates a serious handicap.

Advisory Work. The Agricultural Instructor pays visits to estates and peasants' plots and is in close contact with the planting community.

The Land Settlements continue to receive a great deal of the Instructor's attention and the cane nurseries and demonstration plots received his personal attention. These plots are of great value to the allotment holders as they furnish an object lesson in cultivation and care of the crops and are also a source of supply of suitable planting material for the settlement.

The Agricultural Instructor is Honorary Secretary of the Agricultural and Commercial Society and the Cotton Growers' Association (Inc.). The Agricultural and Commercial Society held nineteen meetings during the year and the Cotton Association nine, and the chief matters discussed were as follows:—Rehabilitation of the Sugar Cane Industry, Central Sugar Factory for the Island, Memorandum for the Royal Commission, Agricultural and Industrial Show; Issuing of cotton purchasers' licenses, Mr. Squires's report re measures of control for cotton pests, Florida Sea Island cotton on the U.K. market, matters connected with the third ordinary general meeting of the West Indian Cotton Association (Inc.).

The Agricultural Instructor wishes to thank the estate owners and the planting community as a whole for their co-operation with the Agricultural Officers, which greatly facilitated the work of the Department.

OFFICIAL VISITS.

Periodical visits were paid by the Commissioner of Agriculture and members of his staff for the purpose of discussing and advising on local agricultural problems. Regular visits are paid by the Agricultural Superintendent at St. Kitts.

PUBLICATIONS RECEIVED.

The following publications have been regularly received and are hereby gratefully acknowledged:—The Journal of the Imperial College of Tropical Agriculture, Journal of Agricultural Research and Experiment Station Record, United States Department of Agriculture, Journal of the Empire Cotton Growing Corporation, Journal of the Agricultural Society, Jamaica, Report of the Agricultural Department, Barbados, Report of the Agricultural Department and the Agricultural Bulletin, Bermuda, Climatological Report, San Juan, Puerto Rico.

REPAIRS TO BUILDINGS.

Minor repairs were done to the office and store room, and the roofs of both buildings were painted.

STAFF CHANGES.

Mr. J. M. Cave, the Assistant Agricultural Officer, was transferred from St. Kitts during the month of February. Mr. Cave relinquished his post in September for an appointment in British Honduras.

Report of the Agricultural Instructor, Anguilla.

FOR THE PERIOD 1ST JANUARY TO 31ST DECEMBER, 1938.

WEATHER CONDITIONS.

The rainfall recorded at the Demonstration Plot in the Valley for the year 1938 was 34.73 inches which is 4.83 inches more than the previous year and 16.91 inches less than the precipitation in 1936. Rain fell on 109 days during the year and the highest fall recorded for any one day was 1.50 inches on the 2nd October. At another station, Wall Blake Estate, the total rainfall for the year was 31.48 inches.

The following table shows the monthly rainfall at the Demonstration Plot for the year under review.

Month.	Rainfall Inches.	No. of days on which rain fell.	Maximum fall. Inches.	Date.
January	1.57	9	0.28	24th
February	2.15	4	1.31	4th
March	0.75	2	0.66	5th
April	1.03	4	0.40	8th
May	1.64	5	0.66	12th
June	6.23	11	1.38	13th
July	2.74	13	0.66	13th
August	4.95	18	0.70	22nd
September	3.22	11	1.08	23rd
October	3.64	14	1.50	2nd
November	4.70	12	0.90	7th
December	2.11	6	0.76	5th
Total	34.73	109		

DISTRIBUTION OF PLANTING MATERIAL.

On the Agricultural Instructor's return to Anguilla, at the end of May, there was no planting material available for distribution to the peasants. A large quantity, however, was received from the Agricultural Superintendent, St. Kitts, which was distributed to all parts of the island free of cost viz: Pigeon Peas, Black Eye Peas, Corn, Yams and a few truck loads of Sweet Potato cuttings. Later in the year the usual seedlings grown in the Demonstration Plot and vegetable seeds were also distributed.

THE COTTON INDUSTRY.

The 1937-38 cotton crop amounted to 23,309 lbs. lint (22,804 lbs. clean cotton and 505 lbs. stained cotton) as compared with 31,440 lbs. in 1937 and 30,471 lbs. in 1936. The cotton was purchased from the peasants at the central ginnery at 3d. per lb. for clean seed cotton with a promise of a bonus when all the cotton was sold in England.

The planting of the 1938-39 crop was started on the 2nd August. A good deal of supplying was done before the peasant lands were fully established, owing chiefly to the attacks of cut worms and unfavourable weather.

The Central Ginnery again supplied the peasants with hand picked seed for planting the crop.

COTTON INSPECTION.

The Agricultural Instructor continued to perform the duties of Cotton Inspector and an Assistant Inspector was appointed for a period of three months.

GROUND PROVISION CROPS.

Food crops were better than the previous year but the rainfall was still very poor being only 4.83 inches more than that of 1937.

OFFICIAL VISITS.

During the year visits were paid to the Demonstration Plot by Mr. R. E. Kelsick, Agricultural Superintendent, Professor Engledow and Dr. MacDonald, Magistrate.

SECTION III.

FINANCIAL STATEMENT AND STAFF OF THE DEPARTMENT.

EXPENDITURE.

	£.	s.	d.
Personal Emoluments	1,615	4	8
Travelling and subsistence allowances	200	11	3
Experiment Stations	148	3	7
Sugar Cane, Cotton and other experiments	253	19	5
Apparatus, chemicals and books	35	15	2
Contingencies	18	5	7
Destruction of wild cotton, etc.	119	15	1
Demonstration Plots (Nevis and Anguilla)	85	12	10
Purchase of seeds	37	15	4½
Central Cane Breeding Station, Barbados	212	10	0
Pedigree bulls for Nevis	67	6	4
Agricultural Show	50	0	0
Total	£2,844	19	3½

REVENUE.

Agricultural Department Receipts	£ 245	19	11½

STAFF OF THE DEPARTMENT.

Agricultural Superintendent	R. E. Kelsick.
Assistant Agricultural Officer (Nevis)	J. M. Cave, D.I.C.T.A.
Junior Agricultural Assistant	E. R. A. Martin, D.I.C.T.A.
Agricultural Instructor, Nevis	W. I. Howell.
Agricultural Instructor, Anguilla.	E. O. R. Lake.
Assistant Clerk and Cotton Inspector, St. Kitts	F. S. Delisle.
Cotton Inspector and Land Officer, Nevis	C. Wilson.
Foreman, Experiment Station, St. Kitts	J. Hanley.

The Assistant Agricultural Officer was transferred for duty in Nevis from the 1st February.

Mr. Cave was on vacation leave from 19th August to 3rd September prior to taking up the post of Agricultural Officer in British Honduras.

Mr. Martin was on sick leave from 22nd August to 28th August.

Mr. Howell was on sick leave from 5th August to 19th August.

Mr. Delisle was on sick leave from 29th March to 7th April and on vacation leave from 8th August to 23rd August.

SECTION IV.

Summary of Legislation Affecting Agricultural Industries as at 31st December, 1938.

PLANT QUARANTINE.

1. EXTERNAL—IMPORT PROHIBITIONS.

The introduction of all plant material is regulated under the Plant Fumigation Ordinance, No. 3 of 1907, and Plant Protection Ordinance, No. 2 of 1923. Many Statutory Rules and Orders, Proclamations and Regulations have been passed under these Ordinances. All seeds, plants, planting material and containers introduced into the Presidency are forwarded by the Customs and Post Office authorities to the Department for inspection.

The following schedule gives the position of legislation regulating the importation of material likely to be a means of introducing diseases or pests.

A. PROHIBITED ARTICLES, INCLUDING PLANTS, SOIL AND PACKAGES AND ARTICLES CONNECTED THEREWITH.

Articles Prohibited.	Country of Origin.	Reasons for Prohibition.	Index of Legislation.
Fruit of the Banana.	All countries and places except the United States of America and the other islands of the Colony of the Leeward Islands.	Panama Disease and insect pests.	Statutory Rules and Orders No. 13 of 1938.
Fruit and plants of the Citrus Family and any part of such fruit or plant.	Cuba, Haiti, Santo Domingo, Puerto Rico and the United States of America.	Citrus Canker, Citrus Black-fly and other pests and diseases.	do.
Other fruit except: Plantains, nuts and dried, canned, candied or other preserved fruit.	Bahamas, Bermuda, British Guiana, Venezuela and all other countries and places except the British Isles, Canada, the British West Indies and the United States of America.	The Mediterranean Fruit Fly.	do.
Vegetables except: Onions, Irish potatoes, canned or preserved vegetables.	do.	do.	do.
Agricultural produce in bags.	Cuba, the Island of Haiti and Santo Domingo, Mexico and the Central American States of Honduras British Honduras, Nicaragua, Guatemala, Salvador and Costa Rica.	The Cotton Boll Weevil.	do.
Used or second-hand bags, sacks and baling material, which have previously contained cotton or cotton products and any articles of any description packed or contained in such bags, sacks and baling material.	The United States of America, Cuba, the Island of Haiti and Santo Domingo, Mexico and the Central American States of Honduras, British Honduras, Nicaragua, Guatemala, Salvador and Costa Rica.	do.	do.

Articles Prohibited.	Country of Origin.	Reasons for Prohibition.	Index of Legislation
Pillows and bedding material containing seed cotton, cotton lint or any part of the cotton plant	Cuba, the Island of Haiti and Santo Domingo, Mexico and the Central American States of Honduras British Honduras, Nicaragua, Guatemala, Salvador and Costa Rica.	The Cotton Boll Weevil.	Statutory Rules and Orders No. 13 of 1938.
Cotton seed, cotton seed hulls, cake and meal, seed cotton, cotton lint and linters and any part of the cotton plant and any other malvaceous plant or any part thereof, except prepared cotton wool, manufactured cotton goods and cotton lint contained in factory made mattresses.	do.	do.	do.
Packages or containers and coverings, personal baggage and effects of any description which contain or are reasonably suspected to have contained any of the articles specified in the section above.	do.	do.	do.
All cargo, personal baggage and effects of any description which by contact or proximity to other baggage, cargo produce or articles of any description are infested or are reasonably suspected to be infested with cotton boll weevil.	All countries and places except Cuba, the Island of Haiti and Santo Domingo, Mexico and the Central American States of Honduras, British Honduras, Nicaragua, Guatemala, Salvador and Costa Rica.	do.	do.
Sugar cane, sugar cane seedlings and plants and all parts of the sugar cane.	All countries and places.	Precaution against the introduction of sugar cane pests and diseases not at present known to be in the Presidency.	do.
Banana plants and parts of banana plants.	All countries and places.	Panama disease, root disease and insect pests.	do.
Sprouted coconuts	Trinidad, Grenada, St. Vincent, St. Lucia, Cuba, Jamaica and all parts of Central and South America.	Red Ring disease and other diseases.	do.

SUMMARY OF LEGISLATION AFFECTING PLANTS.

Articles Prohibited	Country of Origin.	Reasons for Prohibition.	Index of Legislation
Soil and plants growing in soil.	All countries and places.	Precaution against the introduction of pests and diseases not at present known to be in the Presidency.	Statutory Rules and Orders No. 13 of 1938.
Fruit except: plantains, nuts, dried, canned, candied or other preserved fruit.	The British Isles, Canada, the Britsh West Indies and the United States of America.	The Mediterranean Fruit Fly.	do.
Vegetables except: onions, Irish potatoes, canned or preserved vegetables.	do.	do.	do.
All cargo, personal baggage and effects of any description which by contact or proximity to other baggage, cargo, produce or articles of any description are infested or are reasonably suspected to be infested with cotton boll weevil.	Cuba, the Island of Haiti and Santo Domingo, Mexico and the Central American States of Honduras British Honduras, Nicaragua, Guatemala, Salvador and Costa Rica.	The Cotton Boll Weevil.	do.
Soil.	Bahamas, Bermuda, British Guiana, Trinidad and all other countries and places except the British Isles, Canada, the United States of America and other islands of the British West Indies not specified in this item.	Precaution against the introduction of pests and diseases not at present known to be in the Presidency.	do.

B. Prohibited Articles Except Under Licence.

Articles Prohibited	Country of Origin.	Reasons for Prohibition.	Index of Legislation.
Cotton seed, cotton seed hulls, cake and meal, seed cotton, cotton lint and linters and any part of the cotton plant and any other malvaceous plant or any part thereof, except prepared cotton wool, manufactured cotton goods and cotton lint contained in factory made mattresses.	All countries and places except Cuba, the Island of Haiti and Santo Domingo, Mexico and the Central American States of Honduras, British Honduras, Nicaragua, Guatemala, Salvador and Costa Rica.	The Cotton Boll Weevil.	Statutory Rules and Orders No. 13 of 1938.
Packages or containers and coverings, personal baggage and effects of any description which contain or are reasonably suspected to have contained any of the articles specified above.	do.	do.	do.

C. PERMITTED ARTICLES, PROVIDED THESE HAVE PASSED INSPECTION BY THE AGRICULTURAL DEPARTMENT OR ARE OTHERWISE AUTHORISED TO BE IMPORTED.

Articles permitted	Country of Origin.	Index of Legislation.
Garden seeds	From any place	Plant Fumigation Ordinance No. 3 of 1907.
Plants, root-stocks, nuts, tubers, bulbs, cuttings etc. free from soil and not included under "A" and "B."	do.	Plant Protection Ordinance, No. 2 of 1923.

II. INTERNAL—EXPORT PROHIBITIONS.

Prohibited Exports	Destination	Index of Legislation.
Limes, grapefruit, oranges, mangoes, avocado pears, lemons, pineapples, tomatoes, Irish potatoes, and also any other fresh fruit, nut or vegetable, which the Governor-in-Council may declare by Proclamation, unless under the certificate of a Fruit Inspector.	All countries, except the West Indies and Bermuda.	Ordinance No. 11 of 1930. Statutory Rules and Orders No. 1 of 1931.
Cotton seed, unless under licence by the Governor-in-Council.	All Countries	Ordinance No. 4 of 1936.
Baled cotton lint, except with the approval of the Cotton Inspector.	All Countries ...	Ordinance No. 5 of 1936.
Cotton, regulates the amount to be exported annually.	United Kingdom and Europe and such other areas as the Governor may from time to time prescribe.	Ordinance No. 13 of 1935.

III. INTERNAL—CONTROL OF DISEASES AND PESTS WITHIN THE PRESIDENCY.

Diseases and Pests.	Locality	Index of Legislation.
Cuscuta spp. "Dodder"	Generally	Plant Protection Ordinance No. 2 of 1923.
Gumming Disease of Sugar Cane.	do.	Statutory Rules and Orders, No. 20 of 1927.
Mosaic Disease of Sugar Cane.	do.	Proclamation of May 9th, 1923.
Pink Bollworm, Cotton Stainer, and Leaf Blister Mite.	do.	Ordinances Nos. 7 of 1918, 8 of 1918, 12 of 1920, 5 of 1921 and 6 of 1923. S. R. and O. Nos. 22 of 1927, 29 of 1927, 9 of 1928, 3 of 1935 and 5 of 1936.

2. MISCELLANEOUS LEGISLATION AFFECTING AGRICULTURAL INDUSTRIES.

Measure.	Object.	Index of Legislation.
Cotton	To regulate local traffic in.	Ordinances Nos. 10 of 1913, 9 of 1914 and 5 of 1929.
Cotton	To impose a levy on cotton exported from the Presidency.	Ordinance Nos. 22 of 1933 and 8 of 1937. Statutory Rules and Orders No. 2 of 1936.
Cotton	To provide for the control of cotton seed intended for planting.	Ordinance No. 4 of 1936.
Government Lands.	Land Settlement, allotment and sale.	Ordinance No. 4 of 1900. Statutory Rules and Orders, 1937. No. 2 of 1932 and No. 15 of 1937.
Wild Birds Protection.	Close season, etc.	Ordinance No. 6 of 1913. Proclamation of May 8th, 1923 and Statutory Rules and Orders No. 13 of 1937.
Forests	Protection of	Ordinances Nos. 10 of 1903 and 5 of 1928. Statutory Rules and Orders No. 28 of 1927 Regulations of Oct 20th, 1923.

3. ANIMAL QUARANTINE.

I. EXTERNAL—IMPORT PROHIBITIONS.

Prohibited importations	Country of Origin.	Reasons.	Index of Legislation.
Animals, unless provided with local inspection certificate.	All Countries	Prevention of animal diseases	Ordinance No. 2 of 1917. Order-in-Council of Dec. 16th, 1924.
Animals, unless accompanied by a certificate of health signed by a Government Veterinary Officer.	Trinidad	"Dumb Rabies"	Statutory Rules and Orders, No 18 of 1937.

II. INTERNAL—CONTROL OF ANIMAL DISEASES WITHIN THE PRESIDENCY.

Notifiable Diseases.	Measures	Index of Legislation
Rinderpest, Anthrax, Contagious Pleuro-Pneumonia, Foot-and-Mouth disease, Sheep Pox, Sheep Scab, Glanders, Tuberculosis, Cow Pox, Rabies, Texas Cattle Fever, Foot Rot, Surra.	Destruction, disinfection, isolation, regulation of movement.	Ordinance No 2 of 1917.

APPENDIX I.

SUGAR CANE EXPERIMENTS.

I. VARIETY TRIALS.

(I) DRY AREAS.

PLANT CANES AND RATOONS.

Area: Dry.
Estate: La Vallee.
Planted: 28/11/35.
Reaped: as plants 26/1/37 (early)
2/5/37 (late)
as 1st R 7/2/38
Layout: Four 3 x 3 Latin Squares.

Field: Little Garden.
Rainfall as plants: 75 ins. (early).
82 ins. (late)
as 1st R. unavailable.

YIELDS OF CANE (TONS PER ACRE).

Variety	Early Reaping as Plants			Late Reaping as Plants		
	Plants	1st R.	Total	Plants	1st R.	Total
B.2935 ..	48.33	26.29	74.62	47.08	19.24	66.32
B.726 ..	35.76	20.09	55.85	35.76	16.03	51.79
S.C.12/4 ..	34.15	18.04	52.19	35.07	16.74	51.81

B.2935 gave significantly larger yields of plant canes and first ratoons than B.726 and S.C.12/4.

YIELDS OF SUGAR (TONS PER ACRE).

Variety	Early Reaping as Plants			Late Reaping as Plants		
	Plants	1st R.	Total	Plants	1st R.	Total
B.2935 ..	4.01	2.94	6.95	5.19	2.20	7.39
B.726 ..	3.30	2.43	5.73	4.01	1.90	5.91
S.C.12/4 ..	3.19	1.85	5.04	3.73	1.75	5.48

B.2935 gave significantly larger yields of sugar to the acre as plant canes and first ratoons than B.726 and S.C.12/4.

Area: Dry.
Estate: Cunningham.
Planted: 6/11/35.
Reaped as plants: 29/1/37 (early).
5/5/37 (late).
as 1st. R. 3/2/38
Layout: Four 3 x 3 Latin Squares.

Field: Garden.
Rainfall as plants: 63 ins. (early).
70 ins. (late).
as 1st. R. 33 ins. (early).
26 ins. (late).

YIELDS OF CANE (TONS PER ACRE).

Variety	Early Reaping as Plants			Late Reaping as Plants		
	Plants	1st R.	Total	Plants	1st R.	Total
B.2935 ..	47.32	21.61	68.93	48.24	19.06	67.30
P.O.J.2878	40.80	21.25	62.05	41.07	16.65	57.72
S.C.12/4 ..	32.61	17.23	49.84	37.21	16.83	54.04

B.2935 gave significantly larger total yields of cane than P.O.J.2878 and S.C.12/4.

YIELDS OF SUGAR (TONS PER ACRE).

Variety	Early Reaping as Plants			Late Reaping as Plants		
	Plants	1st R.	Total	Plants	1st R.	Total
B.2935 ..	3.69	2.05	5.74	4.90	1.81	6.71
P.O.J.2878	3.60	2.12	5.72	4.47	1.51	5.98
S.C.12/4 ..	3.08	1.75	4.83	3.74	1.52	5.26

There was nothing to choose between the total yields of sugar given by B.2935 and P.O.J.2878 when reaped early as plants.

The total yields of sugar given by S.C.12/4 were significantly inferior to B.2935 for both early and late reapings as plant canes.

PLANT CANES.

Area: Dry lower lands. Rainfall: 48 ins.
Estate: College Field: Big.
Planted: 9/11/36 (B.2935 and S.C.12/4)
24/12/36 (P.O.J.2878).
Reaped: 19/4/38
Layout: One 6 x 6 Latin Square with two replicates of each variety in the rows and columns.

YIELDS OF PLANT CANES.

Variety	Tons cane per acre		Tons sugar per acre	
	Yield	Diff.	Yield	Diff.
B.2935	14.79	—	1.40	—
P.O.J.2878	15.77	+0.98	1.37	—0.03
S.C.12/4	10.61	—4.18	0.94	—0.46

There was little to choose between the yields of cane and sugar given by the varieties B.2935 and P.O.J.2878. S.C.12/4 was significantly inferior to the other varieties.

Area: Dry.
Estate: Needsmust Field: Davy.
Planted: 10/11/36 (B.2935 and S.C.12/4).
22/12/36 (P.O.J.2878).
Reaped: 22/2/38.
Layout: Randomised blocks. Rainfall: 56 ins (15½ months).

YIELDS OF PLANT CANES.

Variety	Tons cane per acre		Tons sugar per acre	
	Yield	Diff.	Yield	Diff.
P.O.J.2878	9.97	—	0.88	—
B.2935	8.88	1.09	0.89	—
S.C.12/4	5.57	4.40	0.49	0.39

There was little to choose between the yields of cane and sugar given by the varieties B.2935 and P.O.J.2878. S.C.12/4 was significantly inferior to the other varieties.

(2) INTERMEDIATE AREAS.

PLANT CANES.

Area: Intermediate lower lands.
Estate: Caines
Planted: 30/10/36.
Reaped: 24/2/38.
Field: Caines Ghaut No. 2.
Rainfall: 72 ins.

YIELDS OF PLANT CANES.

Variety	Tons cane per acre		Tons sugar per acre	
	Yield	Diff.	Yield	Diff.
B.2935	42.27	—	3.87	—
B.726	27.88	14.39	2.92	0.95
B.H.10(12)	27.86	14.41	2.87	1.00

B.2935 gave significantly larger yields of cane and sugar to the acre than B.726 and B.H.10(12). There was nothing to choose between B.726 and B.H.10(12).

Area: Drier upper lands.
Estate: Buckleys.
Planted: 28/10/36.
Reaped: 7/3/38.
Layout: Five randomised blocks with two replicates of each variety in each block.
Field: Upper Tom Young.
Rainfall: Not available.

YIELDS OF PLANT CANES.

Variety	Tons cane per acre		Tons sugar per acre	
	Yield	Diff.	Yield	Diff.
B.2935	27.72	—	2.86	—
B.726	23.68	4.04	2.64	0.22
B.H.10(12)	23.68	4.04	2.49	0.37

B.2935 gave significantly larger yields of cane and sugar than B.726 and B.H.10(12). B.726 gave a somewhat larger yield of sugar than B.H.10(12).

(3) WET AREAS.

PLANT CANES AND RATOONS.

Area: Wet.
Estate: Bellevue. Field: Lower Garden.
Planted: 19/11/35. Rainfall as plants: 97 ins.
Reaped as plants: 9/3/37. as 1st. R. 50 ins.
as 1st. R. 19/4/38.
Layout: Four randomised blocks with two replicates of each variety in each block.

YIELDS OF PLANT CANES AND RATOONS

Variety	Tons cane per acre			Tons sugar per acre		
	Plants	1st R.	Total	Plants	1st R.	Total
B.H.10(12)	43.19	30.94	74.13	4.06	3.50	7.56
B.726 ...	39.71	25.25	64.96	3.86	2.70	6.56
Difference	3.48	5.69	9.17	0.20	0.80	1.00

B.H.10(12) gave significantly larger total yields of cane and sugar than B.726.

II. PLANTING.

(1) TIME OF PLANTING ON LOWER LANDS.

DRY AREAS.

Area: Dry.
Estate: Buckleys. Field: Blakes Wind Mill.
Reaped: 4/3/38. Variety: B.2935 (plant canes).
Layout: Two 5 x 5 Latin Squares.

Time of planting	Yield of plant canes t.p.a.	Difference
7th October, 1936	37.84	....
5th November, 1936	39.70	1.86
4th December, 1936	40.14	2.30
5th January, 1937	39.95	2.11
4th March, 1937	39.95	2.11

The early October planting gave a significantly smaller yield of cane than the later plantings. There was nothing to choose between the yields of cane given by the November, December, January or March plantings.

WET AREAS.

Area: Wet.
Estate: Belmont. Field: Upper Old Mill.
Reaped: 15/3/38. Variety: B.H.10(12) (plant canes).
Layout: Two 5 x 5 Latin Squares.

Time of Planting	Yield of plant canes t.p.a.
19th Aug. 1936	17.88
15th Sept. 1936	17.52
2nd Nov. 1936	17.79
17th Dec. 1936	18.27
5th March 1937	17.34

Time of planting had little effect on yield under the conditions which obtained.

(2) DISTANCE OF PLANTING.

DRY AREAS.

Area: Dry.
Estate: Canada Field: Upper Big Pond.
Planted: 8/11/35. Variety: S.C.12/4.
Reaped as plants: 2/4/37. Rainfall as plants: 60 ins.
as 1st. R. 19/2/38. as 1st. R.. 28 ins.
Layout: Three 4 x 4 Latin Squares.

YIELDS OF CANE (TONS PER ACRE).

Planting distance	Plants	1st R.	Total
4½′ x 3′	40.17	13.68	53.85
4½′ x 4½′	36.54	15.03	51.57
Difference	+ 3.63	— 1.35	+ 2.28

The closer spacing gave the larger yield of plant canes and the wider spacing the larger yield of ratoons.

WET AREAS.

Area: Wet.
Estate: Mansion Field: Pen. Variety: B.H.10(12).
Planted: 11/12/35. Rainfall as plants: 78 ins.
Reaped as plants: 3/5/37. as 1st. R. 40 ins.
as 1st. R. 12/4/38.
Layout: Three 4 x 4 Latin Squares.

YIELDS OF CANE (TONS PER ACRE).

Planting distance	Plants	1st R.	Total.
4½′ x 3′	39.11	36.36	75.47
4½′ x 4½′	35.06	35.10	70.16
Difference	4.05	1.26	5.31

In this experiment the yields of plant canes and ratoons were larger for the closer than the wider spacing.

III. CULTURAL.

(1) CROSS-HOLING vs. OPEN FURROWS ON UPPER LANDS.

Area: Wet.
Estate: Mansion. Field: Big Saddlers.
Planted: 23/10/34.
Reaped as plants: 25/3/36.
as 1st. R. 6/4/37.
as 2nd. R. 8/4/38.
Rainfall as plants: 77 ins.
as 1st R. 69 ins.
as 2nd R. 42 ins.
Layout: Eight randomised blocks with two replicates of each treatment in each block.

Cultural treatment	Plants	1st R.	2nd R.	Total.
Open furrows	40.21	41.78	33.12	115.11
Cross-holed furrows	39.45	41.23	32.81	113.49
Difference	0.76	0.55	0.31	1.62

No immediate or residual gain in yield resulted from cross-holing the furrows.

(2) CHISELLING THE FURROWS ON THE UPPER LANDS.

Area: Wet.
Estate: Molineux.
Planted: 10/9/34.
Reaped as plants: 31/3/36.
as 1st. R. 13/4/37.
as 2nd R. 20/4/38.
Field: Wash.
Variety: B.H.10(12).
Rainfall as plants: 91 ins.
as 1st R. 77 ins.
as 2nd R. 43 ins.
Layout: Eight randomised blocks of 4 treatments.

Treatment of furrows in 1934	Yield of cane (tons per acre)			
	Plants (1936)	1st R. (1937)	2nd R. (1938)	Total
Chiselled to 6 ins.	34.46	25.66	23.13	83.25
Unworked	34.52	23.47	22.39	80.38
Gain from chiselling	— 0.06	+ 2.19	+ 0.74	+ 2.87

The individual and total gains in yields resulting from chiselling the furrows cannot be established as statistically significant.

(3) ROUTINE TILLAGE.

PLANT CANES.

Area: Dry.
Estate: West Farm. Field: Seaside. Variety: B.2935, plant canes.
Planted: 20/11/36.
Reaped: 9/3/38. Rainfall: 55 ins.
Layout: Ten randomised blocks of two treatments.

Experimental Treatment	Yield of plant canes tons per acre.
Tilled at regular intervals*	28.89
Untilled	29.73

* 20th March, 19th—20th April and 21st—22nd May, 1937.

Tillage was performed with a mule-drawn two-pronged implement. The depth of tillage was 6—8 inches. No gain in yield of plant canes resulted from this cultural operation.

Area: Wet silty lower lands.
Estate: Belmont. Variety: B.H.10(12) plant canes.
Field: Grove Garden.
Planted: 24/11/36.
Reaped: 16/3/38. Rainfall: 59 ins.
Layout: Ten randomised blocks of two treatments.

Experimental Treatment	Yield of plant canes tons per acre
Tilled at regular intervals* ..	28.75
Untilled	28.30

* 24th—25th March, 8th—9th May, 1937.

Tillage was performed with a mule-drawn two-pronged implement. The depth of tillage was about 4 inches. No gain in yield of plant canes resulted from this cultural operation.

All plots on the experimental area were weeded as in standard estate practice.

RATOON CANES.

Area: Dry.
Estate: Hermitage. Field: Wallow Range. Variety: B.H.10(12), second ratoons.
Reaped as 1st R: May, 1937. Rainfall: 27 ins.
as 2nd R: 25/4/38.
Layout: Six randomised blocks of three treatments.

Cultural Treatment	Yield of 2nd R. (t.p.a.)
(1) Nil	17.14
(2) Stools moulded ..	17.91
(3) Trash ranged on alternative banks and bared banks tilled	17.14

The stools were moulded (Treatment 2) on 8th July, 1937. The trash was ranged on alternate banks and the bared banks were broken with a Planet Junior and then tilled with a mule drawn two-pronged implement (Treatment 3) on 8th July, 1937.

A small gain, which cannot be established as statistically significant, resulted from moulding the second ratoon stools. Ranging the trash and tilling the bared banks had no effect on the yield of the second ratoons.

Area: Wet. Estate: Parsons. Field: Head Nine Acre.
Variety: B.H.10(12), first ratoons.
Reaped as plants: Mid-June, 1937. Rainfall: 44 ins.
as 1st R: 10/5/38.
Layout: Six randomised blocks of 3 treatments.

Cultural Treatment	Yield of 1st R. (t.p.a.)
Nil	28.82
Stools moulded	29.66
Trash ranged on alternate banks and bared banks forked	28.98

The cultural operations were performed on 9th July, 1937.

As in the previous experiment moulding the stools gave rise to a small gain in yield which cannot be established as statistically significant. Ranging the trash on alternate banks and forking the bared banks had little effect on the yield of the first ratoons.

IV. MULCHING.

(1) IMMEDIATE EFFECTS OF MULCHING WITH TRASH.

IN PRESENCE AND ABSENCE OF INORGANIC POTASH.

Area: Dry.
Estate: Canada. Field: Big Pond. Variety: B.2935.
Planted: 25/10/36. Rainfall: 46 inches.
Mulched: 9/3/37.
Reaped: 10/2/38.
Layout: Three 4 x 4 Latin Squares.

Mulching Treatment	Muriate of Potash per acre	
	Nil	1 cwt.
6 ins. trash	39.86	38.40
Nil	34.36	34.64
Gain from mulching ..	5.50	3.76

The experimental area was heavily pen-manured, and dressed with sulphate of ammonia.

(2) IMMEDIATE AND RESIDUAL EFFECTS OF MULCHING WITH MEGASSE.

IN PRESENCE AND ABSENCE OF INORGANIC POTASH.

Area: Dry. Estate: West Farm. Field: Eight Acre.
Variety: B.2935. Rainfall as plants: 78 ins.
as 1st R: 35 ins.

Planted: 6/11/35.
Mulched: Early March, 1936.
Reaped as plants: 20/2/37.
as 1st R: 28/1/38.
Layout: Three 4 x 4 Latin Squares.

YIELD OF PLANT CANES (TONS PER ACRE).

Mulching Treatment (1936)	Muriate of Potash per acre	
	Nil	1 cwt.
2—3 ins. megasse	62.07	61.20
Nil	58.06	62.48
Gain from mulching ..	+4.01	—1.28

The experimental area was heavily penmanured, and dressed with sulphate of ammonia.

In the absence of inorganic potash the immediate gain from mulching with megasse was 4.01 tons.

YIELD OF FIRST RATOONS (TONS CANE PER ACRE).

Mulching Treatment to Plant Canes	Muriate of Potash to 1st R.	
	Nil	1 cwt.
2—3 ins. megasse	26.67	28.58
Nil	27.29	27.54
Residual gain from mulch ..	—0.62	+1.04

The experimental area was dressed with sulphate of ammonia early in the life of the ratoons.

In the absence of inorganic potash the megasse treatment gave rise to no residual gain in yield.

IN THE PRESENCE OF INORGANIC POTASH.

Area: Dry. Estate: Buckleys. Field: Copper.
Variety: B.2935 Rainfall as plants: 72 ins.
as 1st R: 35 ins.

Planted: 5/11/35.
Mulched: 10/2/36.
Reaped as plants: 10/2/37.
as 1st R: 1/2/38.
Layout: Three 4 x 4 Latin Squares.

YIELDS OF CANE (TONS PER ACRE).

Mulching Treatment in 1936	Plants (1937)	1st R. (1938)	Total
2—3 ins. cover of megasse ..	61.52	43.68	105.20
Nil	57.92	41.71	99.63
Gains from mulch	3.60	1.97	5.57

The experimental area was dressed with muriate of potash and sulphate of ammonia as plant canes and ratoons.

The immediate and residual gains from mulching with megasse amounted to 5.57 tons of cane, a statistically significant increase in yield.

V. LIMING.

(1) SIZE OF DRESSING OF LOCAL SLAKED LIME.

Area: Wet Upper Lands. Estate: Mansion. Field: Cocoa Ghaut.
Variety: B.H.10(12) Rainfall as plants: 69 ins.
as 1st R: 55 ins.
as plants: 61 ins.

Planted: 23/1/34 and 26/11/36.
Reaped as plants: 5/6/35.
as 1st R: 22/5/36.
as plants: 3/5/38.
Layout: Two 4 x 4 Latin Squares.

YIELDS OF CANE (TONS PER ACRE).

Slaked Lime per acre (1933)	Plants (1935)		1st Ratoons (1936)		Plants (1938)		Total (to date)	
	Yield	Gain	Yield	Gain	Yield	Gain	Yield	Gain
Nil	38.19	....	31.21	....	32.46	....	101.86	....
1.55 tons	40.66	2.47	32.25	1.04	32.56	0.10	105.47	3.61
3.10 tons	42.03	3.84	34.69	3.48	34.69	2.23	111.41	9.55
4.65 tons	43.75	5.56	36 77	5.56	35.56	3.10	116.08	14.22
Average gain	....	3.96	....	3.36	....	1.81	....	9.13

The dressings of slaked lime were applied two months before planting.

(2) SIZE OF DRESSING OF GROUND LIMESTONE.

Area: Drier upper lands Estate: West Farm Field: Upper Cinnamon
Variety: B.2935. Rainfall: 65 ins.
Planted: 21/10/36.
Reaped: 4/5/38
Layout: Two 4 x 4 Latin Squares.

Ground limestone per acre.	Yield of plant canes tons per acre
Nil	25.94
0.75 tons	25.29
1.50 tons	26.29
2.25 tons	25.20

The dressings of ground limestone were applied seven weeks before planting. It would appear doubtful whether the experimental area is in need of lime.

VI. MANURING.

(1) SIZE OF DRESSING OF PEN MANURE.

Area: Dry Estate: Douglas Field: Cayon
Variety: B.H.10(12) Rainfall as plants: 83 ins.
Planted: 5/11/35 as 1st R: 26 ins.
Reaped as plants: 19/5/37
as 1st R: 21/4/38
Layout: Three 4 x 4 Latin Squares

Pen manure per acre	Yield of cane (tons per acre)			
	Plants	1st R.	Total	Diff.
Nil	30.04	15.81	45.85	....
10 tons	33.12	16.64	49.76	3.91
20 tons	33.17	16.76	49.93	4.08
30 tons	35.98	17.01	52.99	7.14

All plots were given a second-season dressing of 2 cwts. sulphate of ammonia to the acre as plant canes and an early dressing of this manure as ratoons.

The gains in yield of plant canes and of ratoons resulting from treatment with pen manure are statistically significant.

(2) SUPPLEMENTARY TREATMENT OF PENMANURED SOILS WITH INORGANIC MANURES.

NITROGEN AND POTASH.

Area: Wet Estate: Molineux Field: Andoe
Variety: B.H.10(12)

Rainfall as plants: 91 ins.
as 1st R: 46 ins.

Planted: 4/11/35
Penmanured: 18/10/35.
Reaped as plants: 11/3/37.
as 1st R: 24/4/38.
Layout: One 6 x 6 Latin Square.

S/A per acre		Potash p.a.	Yield of cane (tons per acre)		
Jan. (1936)	June (1936)	Jan. (1936)	Plants	1st R.	Total
Nil	2 cwts.	Nil	39.75	35.78	75.53
Nil	3 cwts.	Nil	38.74	36.49	75.23
1 cwt.	2 cwts.	Nil	41.47	37.20	78.67
1 cwt.	3 cwts.	Nil	38.47	35.98	74.45
1 cwt.	2 cwts.	1 cwt.	39.72	35.09	74.81
1 cwt.	3 cwts.	1 cwt.	40.46	37.47	77.63

The experimental area was penmanured at the rate of 28 tons to the acre. No manures were applied to the ratoon canes.

Neither an early dressing of 1 cwt. to the acre of sulphate of ammonia, nor an increase in the late dressing from 2 cwts. to 3 cwts., nor an early dressing of 1 cwt. muriate of potash, had a significant effect on the yield of plant canes under the conditions of the experiment.

No significant residual effect of these dressings on the yield of the first ratoons was found to obtain.

Area: Wet Estate: Bellevue Field: Good Luck.
Variety: B.H.10(12)
Penmanured: September 1936.
Planted: 14/10/36 Rainfall: 85 ins.
Reaped: 5/4/38
Layout: One 6 x 6 Latin Square.

Early manures (24/11/36)	Late S/A 2 cwts	Late S/A 3 cwts	All plots
Nil	29.91	29.43	29.67
1 cwt. S/A	25.18	29.60	27.39
1 cwt. S/A, 1 cwt. potash	27.41	28.15	27.78

The experimental area was penmanured at the rate of 25 tons to the acre.

Area: Intermediate. Estate: Stapleton. Field: Cistern
Variety: B.H.10(12)
Penmanured: October, 1936
Planted: 28/10/36 Rainfall: 64 ins.
Reaped: 16/2/38
Layout: One 6 x 6 Latin Square.

Early manures (19/12/36)	Late S/A (27/7/37) 2 cwts.	Late S/A (27/7/37) 3 cwts.
Nil	16.67	15.52
1 cwt. S/A	17.34	16.40
1 cwt. S/A, 1 cwt potash	16.20	15.86

The experimental area was penmanured at the rate of 25 tons to the acre.

POTASH.

Area: Dry Estate : West Farm Field: Eight Acre
Penmanured: 1/11/35 Variety: B.2935
Planted: 6/11/35
Reaped as plants: 20/2/37 Rainfall as plants: 78 ins.
as 1st R: 28/1/38 as 1st R: 35 ins.
Layout: Three 4 x 4 Latin Squares.

Yields of cane (tons per acre)

Muriate of potash to plants and to 1st R.	Plants (1937)	1st R. (1938)
1 cwt. per acre	62.48	27.54
Nil	58.06	27.29
Gain from potash	4.42	0.25

The experimental area was penmanured at the rate of approximately 30 tons to the acre. The plant canes were given basal dressings to the acre of 1 cwt. sulphate of ammonia early and 3 cwts. late. The ratoon canes were given 3 cwts. sulphate of ammonia to the acre early.

The dressing of pen manure contained insufficient immediately available potash for the requirements of the plant canes in this experiment, for an early application of 1 cwt. of muriate of potash to the acre led to a gain in yield of 4.42 tons cane.

No gain in yield of the first ratoons resulted from a dressing of 1 cwt muriate of potash to the acre.

Area: Dry Estate: Canada Field: Big Pond
Variety: B.2935
Planted: 25/10/36 Rainfall: 46 ins.
Reaped: 10/2/38.
Layout: Three 4 x 4 Latin Squares.

Muriate of potash per acre	Yield of plant canes tons per acre
1 cwt.	34.64
Nil	34.36
Gain from potash	0.28

The experimental area was penmanured at the rate of approximately 30 tons to the acre. Basal dressings of sulphate of ammonia of 1 cwt. (early) and 3 cwts. (late) were applied.

On this lower-yielding area an early dressing of 1 cwt. muriate of potash to the acre did not lead to an appreciable gain in yield.

Area: Wet. Estate: Mansion. Field: Big Saddlers.
Penmauured: Before planting.
Variety: B.H.10(12)
Reaped as plants: 25/3/36 Rainfall as 1st R: 69 ins.
as 1st R: 6/4/37 as 2nd R: 42 ins.
as 2nd R: 8/4/38
Layout: Eight randomised blocks with two replicates of each treatment in each block.

The plant canes in this experiment were dressed to the acre with 28 tons of pen manure, 1 cwt. muriate of potash and adequate sulphate of ammonia. The ratoon canes on certain plots were treated with muriate of potash to determine whether adequate potash for the crop series was applied to the plant canes All plots of both ratoon crops were dressed with sulphate of ammonia.

Potash per acre to 1st R. and to 2nd. R.	Yield of cane (t.p.a.)	
	1st R.	2nd R.
1 cwt.	41.84	33.16
Nil	41.17	32.77
Gain	0.67	0.39

Under the conditions which obtained only small gains in yield resulted from the application of 1 cwt. muriate of potash to the first and to the second ratoons.

PHOSPHATE.

Area: Wet upper lands Estate: Mt. Pleasant Field: Copper Hole.
Penmanured: Before planting.
Variety: B.H.10(12)
Planted: 14/9/36
Reaped: 26/3/38
Layout: Three 4 x 4 Latin Squares with two replicates of each treatment in the rows and columns.

Superphosphate per acre	Yield of plant canes tons per acre
1 cwt.	24.56
Nil	24.35

The experimental area was penmanured at the rate of about 20 tons to the acre. Basal dressings to the acre of 2 cwts. sulphate of ammonia and 2 cwts. muriate of potash (early), and 3 cwts. sulphate of ammonia (late) were applied.

The early dressing of 1 cwt. superphosphate to the acre did not give rise to an immediate increase in yield of cane.

(3) PEN MANURE v. INORGANIC NITROGEN AND POTASH.

Area: Dry lower lands Estate: Buckleys Field: Copper
Penmanured: 3/11/35
Variety: B.2935 Rainfall as plants: 72 ins.
as 1st R: 35 ins.
Planted: 5/11/35
Reaped as plants: 10/2/37
as 1st R: 1/2/38
Layout: Three 4 x 4 Latin Squares.

PLANT CANES (1937).

Tr. No.	Experimental treatments per acre to plant canes	Yield per acre of plant canes
(1)	28 tons pen manure	63.28
(2)	28 tons pen manure, 2 cwts. S/A late	64.96
(3)	2 cwts. S/A and 1½ cwts potash early, 3 cwts. S/A late	57.92
(4)	As (3) with 2-3 ins. megasse mulch	61.52

Differences in yield of plant canes exceeding 3.12 tons to the acre might be due to chance less than once in 20 times.

Pen manure gave a significantly larger gain in yield than sulphate of ammonia and muriate of potash.

FIRST RATOONS (1938)

Tr. No.	Experimental treatments per acre to ratoon canes	Yield per acre of 1st R.
(1)	3 cwts. S/A	43.74
(2)	3 cwts. S/A, 1½ cwts. potash	44.32
(3)	3 cwts. S/A, 1½ cwts. potash	41.71
(4)	3 cwts. S/A, 1½ cwts. potash	43.68

The potash was applied in the form of muriate.

There is nothing to choose between the yields of ratoon canes on the plots which were penmanured or mulched as plants. The yield on the plots which received only nitrogen and potash as plants is significantly smaller than the average yield for the other plots.

Area: Wet lower lands Estate: Molineux. Field: Andoe
Penmanured: 2/11/35
Variety: B.2935
Planted: 5/11/35 Rainfall as plants: 91 ins.
Reaped as plants: 16/3/37 as 1st R: 45 ins.
as 1st R. 21/4/38
Layout: Four 3 x 3 Latin Squares.

PLANT CANES (1937)

Tr. No.	Experimental treatments per acre to plant canes	Yield per acre of plant canes
(1)	28 tons pen manure	38.28
(2)	28 tons pen manure, 2 cwts. S/A early, 2 cwts. S/A late	40.58
(3)	3 cwts. S/A and 1½ cwts. potash early, 3 cwts. S/A late	33.94

Differences in yield of plant canes exceeding 1.97 tons to the acre might be due to chance less than once in 20 times.

The penmanured plots gave significantly larger yields than the plots dressed with sulphate of ammonia and muriate of potash.

FIRST RATOONS (1938)

Tr. No.	Experimental treatments per acre to ratoon canes	Yield per acre of 1st R.
(1)	Nil	34.55
(2)	3 cwts. S/A	40.25
(3)	3 cwts. S/A, 1½ cwts. potash	38.59

Differences in yield of ratoon canes exceeding 3.96 tons to the acre might be due to chance less than once in 100 times.

There is no significant difference between the yield of ratoons on the plots which received pen manure as plant canes and nitrogen as ratoons and the yield of ratoons on the plots dressed only with nitrogen and potash. The total yield for plants and first ratoons on the former plots however exceeds by a significant amount the total yield of the plots which received no pen manure as plants.

(4) MANURIAL TREATMENT OF UNPENMANURED SOILS.

SIZE OF DRESSING OF NITROGEN.

Area: Drier Upper lands. Estate: West Farm. Field: Wind Mill Johnsons
Variety: B.H.10(12
Planted: 10/9/35 Rainfall as plants 87 ins. (approx.)
as 1st R: 35 ins. (approx.)

Reaped as plants: 6/5/37
as 1st R. 8/5/38
Layout: one 6 x 6 Latin Square.

Sulphate of ammonia per acre.		Yields of cane (tons per acre)	
Plant canes	1st R.	Plants (1937)	1st R. (1938)
2 cwts. early, 3 cwts. late	3 cwts.	29.93	17.63
2 cwts. early, 2 cwts. late	2 cwts.	28.49	16.00
Difference		1.44	1.63

The gain in yield of plant canes resulting from the heavier late dressing of nitrogen cannot be established as statistically significant.

The gain in yield of ratoon canes from the heavier dressing of nitrogen might be due to chances less than once in 20 times.

PLANT CANES.

Area: Wet upper lands Estate: Wingfield Field: Garden.
Variety: B.H.10(12) Rainfall: 93 ins.
Planted: 14/10/36.
Reaped: 13/4/38
Layout: Two 4 x 4 Latin Squares.

Sulphate of ammonia per acre		Yield of plant canes tons per acre	Gain Tons per acre
6-8 weeks after planting	Before end dry season		
Nil	Nil	27.95	....
2 cwts.	Nil	27.37	0.58
2 cwts.	1½ cwts.	31.85	3.90
2 cwts.	3 cwts.	34.89	6.94

No gain in yield of plant canes resulted from the early dressing of sulphate of ammonia in the absence of a late dressing.

The gains in yield from the late dressings, in the presence of an early dressing of 2 cwts., are statistically significant.

POTASH.

Area: Drier upper lands. Estate: West Farm. Field: Wind Mill Johnsons.
Variety: B.H.10(12)
Planted: 10/9/35 Rainfall as plants: 87 ins. (approx.)
as 1st R: 35 ins. (approx.)
Reaped as plants: 6/5/37
as 1st R: 8/5/38
Layout: One 6 x 6 Latin Square.

YIELDS OF CANE (TONS PER ACRE)

Muriate of potash per acre.		Yield (1937)		1st R. (1938)	
Plant canes	1st R.	Plants	Gain	Yield	Gain
Nil	Nil	27.03	....	15.53	....
1 cwt.	1 cwt.	30.08	3.05	17.52	1.99
2 cwts.	2 cwts.	30.51	3.48	17.39	1.86

All plots were dressed with sulphate of ammonia and superphosphate as plant canes and with sulphate of ammonia as ratoons.

The average gains in yield of plant canes and ratoons resulting from treatment with potash are statistically significant.

Area: Dry Estate: Cranstouns Field: Dirt Heap
Variety: B.H.10(12), plant canes Rainfall: 61 ins.
Planted: 5/11/36
Reaped: 14/2/38
Layout: Three 4 x 4 Latin Squares with two replicates of each treatment in the rows and columns.

Muriate of potash per acre	Yield of plant canes tons per acre
1½ cwts.	8.49
Nil	7.80
Gain from potash	0.69

The gain from treatment with muriate of potash, although small, might be due to chance less than once in 100 times.

Area: Wet Estate: Molineux Field: Wash
Variety: B.H.10(12)
Planted: 19/9/34 Rainfall as plants: 91 ins.
Reaped as plants: 31/3/36 as 1st R: 77 ins.
as 1st R: 13/4/37 as 2nd R: 43 ins.
as 2nd R: 20/4/38

Layout: Eight randomised blocks of 4 treatments with two replicates of each treatment in the rows and columns.

YIELDS OF CANE (TONS PER ACRE)

Potash per acre to plants, to 1st R. and to 2nd R.	Plants (1936)	1st R. (1937)	2nd R. (1938)	Total
1 cwt.	36.18	26.91	25.72	88.81
Nil	32.80	22.22	19.80	74.82
Gain from potash	3.38	4.69	5.92	13.99

The plots were dressed with sulphate of ammonia as plant canes and as ratoons. The potash was applied in the form of muriate.

The gains in yield resulting from potash treatment of the plant canes, the first ratoons and the second ratoons might each be due to chance less than once in 100 times.

Area: Wet upper lands Estate: Milliken Field: Corn
Variety: B.H.10(12) Rainfall: Not available
Planted: 1/12/36
Reaped: 9/4/38
Layout: Three 4 x 4 Latin Squares with two replicates of each treatment in the rows and columns.

Potash per acre	Yield of plant canes (t.p.a.)
1½ cwts.	39.46
Nil	32.62
Gains from potash	6.84

All plots were dressed with sulphate of ammonia and superphosphate.

The immediate gain in yield from the treatment with 1½ cwts. muriate of potash to the acre might be due to chance far less than once in 100 times.

Area: Wet intermediate lands. Estate: Belmont Field: Middle Mountain.
Variety: B.H.10(12) Rainfall as plants: 111 ins.
Planted: 15/10/35 as 1st R: 43 ins.
Reaped as plants: 13/5/37
as 1st R: 13/5/38
Layout: One 6 x 6 Latin Square.

YIELDS OF CANE (TONS PER ACRE)

Muriate of potash to plants in 1935.	Plants (1937)		1st R. (1938)		Total (to date)	
	Yield	Gain	Yield	Gain	Yield	Gain
Nil	27.01	....	7.82	....	34.83	....
1½ cwts.	30.79	3.78	10.61	2.79	41.40	6.57
3 cwts.	31.48	4.47	11.66	3.84	43.14	8.31

All plots were dressed with sulphate of ammonia and superphosphate as plant canes and with sulphate of ammonia as ratoons. No potash was applied to the ratoon canes.

The treatments with potash gave rise to significant immediate gains in yield of plant canes and to significant residual gains in yield of the ratoons.

PHOSPHATE

Area: Intermediate Estate: Bourkes Field: Home
Variety: B.H.10(12) Rainfall: 79 ins.
Planted: 12/10/36
Reaped: 1/3/38
Layout: Three 4 x 4 Latin Squares with two replicates of each treatment in the rows and columns.

Superphosphate per acre	Yield of plant canes tons per acre
1 cwt.	21.23
Nil	19.48
Gain from super	1.75

The experimental area was dressed with adequate nitrogen and potash.

The immediate gain in yield resulting from treatment with superphosphate approaches statistical significance.

Area: Wet Estate: Estridges Field: Upper Cherry Tree
Variety: B.H.10(12) Rainfall: 71 ins.
Planted: 10/11/36
Reaped: 10/5/38
Layout: Three 4 x 4 Latin Squares with two replicates of each treatment in the rows and columns.

Superphosphate per acre	Yield of plant canes tons per acre
1 cwt.	32.44
Nil	31.59
Gain from super	0.85

The experimental area was dressed with adequate nitrogen and potash.

Area: Wetter upper lands Estate: Molineux Field: Sick House
Variety: B.H.10(12)
Planted: 14/10/36 Rainfall: 72 ins.
Reaped: 20/3/38
Layout: Three 4 x 4 Latin Squares with two replicates of each treatment in the rows and columns.

Superphosphate per acre	Yield of plant canes tons per acre
1 cwt.	40.87
Nil	40.76

The experimental area was dressed with adequate nitrogen and potash.

No immediate gain in yield of plant canes resulted from the treatment with superphosphate under the conditions which obtained.

Area: Intermediate Estate: Lavingtons Field: Copper Hole
Variety: B.H.10(12)
Planted: 12/11/36 Rainfall: Not available
Reaped: 12/3/38
Layout: Three 4 x 4 Latin Squares with two replicates of each treatment in the rows and columns.

Superphosphate per acre	Yield of plant canes tons per acre
1 cwt.	28.51
Nil	29.00

The experimental area was dressed with adequate nitrogen and potash.

No immediate gain in yield resulted from the treatment with superphosphate under the conditions which obtained.

APPENDIX II.

Report on the Land Settlement Scheme in Nevis.

During 1938 an Agricultural Survey of the two Land Settlements viz: Hamilton and Low Ground was carried out by Mr. J. M. Cave, D.I.C.T.A., Assistant Agricultural Officer, and much valuable information was obtained.

The object of the survey was to obtain definite information regarding the progress made and the amount of individual effort used by the allottees on these Settlements, with a view to exposing any hitherto unnoticed needs of allottees as well as a foundation for future policy.

The following are some of the major needs of allottees as shown by this survey and which were remedied during the year:—

Applicable to both Settlements.

(a) The extension of the period of repayment from ten to fifteen years.

(b) The establishment of credit facilities whereby allottees can obtain artificial manures on easy terms.

The extension of the period of repayment greatly reduced the annual instalments, and automatically placed the scheme on a better financial footing.

At the time of writing, the scheme for advancing on a credit system, of artificial manures to allottees is a financial success, and arrangements are being made to supply pen as well as artificial manures during 1939.

Allottees are realising, more and more, the necessity of applying pen manure to their lands if fertility is to be improved or even maintained.

Applicable to Low Ground only.

(c) The establishment of a proper water supply for the paddock, and the fencing of an additional sixty acres for subsequent subdivision into paddocks.

Allottees now have an excellent water supply, and with the establishment of sour grass on the additional sixty acres, ample pasturage.

GENERAL.

In April, 1932, a Land Board was appointed and placed in control of the Settlements, and subsequently directed the policy of the Settlements until May 1938, when it was decided to place the entire Land Settlement Scheme under the direct control of the Agricultural Department.

The Low Ground Settlement.

Low Ground estate was purchased by Government for Land Settlement in November, 1931. It is about 2½ miles in length by about ⅓ mile mean width and extends from the sea up to Pond Hill. The soil on a part of the estate is a very heavy clay and requires adequate drainage for successful cultivation.

At the end of the year sixty-seven out of a total of sixty-nine allotments were occupied, and it is hoped, with the reduction in the annual instalments, that allottees will make a real effort to pay off all arrears on reaping their cane and cotton crops early in 1939.

Now that pen manure is being placed within the reach of allottees there is every reason to expect an improvement in the fertility of the heavy clay soils of which the upper section of this Settlement is comprised, and that the lower and drier lands will be made more drought resisting.

The introduction of the new cane variety B.2935, which does well under dry conditions, although at first looked on with suspicion by allottees is now being readily asked for. This variety does exceptionally well under Nevis conditions, and should go a long way towards increasing the individual tonnage output of allottees. At the time of writing several allottees have obtained from 25 to 28 tons per acre from this variety as against 8 to 10 tons from the older varieties.

There are still many common faults among allottees in connection with cultural methods, the chief of which are, inadequate drainage especially in the heavy clay soils, late cultivation and planting, and the failure to weed growing crops.

With the establishment of a proper water supply for the paddock, and additional pasturage, allottees now have at their disposal excellent conditions under which to raise cattle. At the time of writing an effort is being made by Government to obtain an export market for beef cattle, which, if successful, augurs well for the allottees on this settlement.

PLANTING MATERIAL DISTRIBUTED TO THE SETTLEMENT FROM NURSERIES OF THE AGRICULTURAL DEPARTMENT.

	1932	1933	1934	1935	1936	1937	1938
Cane Plants	49,950	54,510	84,520	97,135	84,550	61,050	186,900
Onion Seedlings	4,500	33,800	24,300	34,200	31,800	73,400	43,200
Tomato Seedlings	21,700	19,150	27,450	18,200	27,450	28,350	100,150
Cabbage Seedlings	120	240	...	...	...	...	...
Egg Plant	...	...	...	...	...	200	80
Selected Cotton Seed lb.	10	524	653	980	1,270	1,290	1,225
Yams, lb.	...	65	160	245	80	80	15
Seed Corn lb.	...	19	2	3	4	4	2
Peas & Beans lb.	3	3	2	2	4	5	1
Cassava Cuttings	400	400	...	...	...	150	...
Sweet Potato Cuttings	...	250	...	...	...	60	100
Grafted Mangoes (Julie) Plants	2	...	...	...	...	5	1
Budded Oranges	2	...	...	...	...	2	...
Pine Apple Slips	94	...	...	...	...	...	8

The Hamilton Settlement.

Hamilton estate was purchased by Government for land settlement in January 1934. One hundred and seventy four allottees are purchasing allotments on this Settlement, and there is every reason to believe that it is fast becoming a flourishing centre. It is situated about 500 to 700 feet above sea level and enjoys a good rainfall but is somewhat rocky.

On this estate there is a plant for making muscovado sugar and syrup.

Arrangements were made in November for carrying out certain improvements to this plant, with a view to purchasing allottees' canes for the manufacture of syrup in 1939, thereby saving them the cost of transportation to Charlestown. At the time of writing 797 tons of cane have been purchased, and 372 barrels of syrup manufactured. As a means of further assisting allottees, the plant was operated by labour drawn from the settlement.

There are five small plants on the Island which manufacture muscovado sugar for peasants on the share system, and it is interesting to note that each allottee tries to retain a small quantity of cane to be manufactured into sugar for his private use during the year. The allottee who fails to obtain his two or three barrels of sugar feels that a major calamity has befallen him.

A seven acre cane nursery was maintained during the year from which cane plants were distributed free of charge to allottees. This nursery also serves as a demonstration of the value of correct cultural methods and manuring.

There is a decided increase in the number of allottees using pen manure, and there are quite a number of small field pens on the settlement.

Allottees are becoming more and more interested in the growing of cash crops, especially tomatoes, in the growing of which they lead the Island.

There exists a certain amount of healthy competition among allottees, and discussions are sometimes heard on yield differences and the reasons for same.

PLANTING MATERIAL DISTRIBUTED TO THE SETTLEMENT FROM NURSERIES OF THE AGRICULTURAL DEPARTMENT.

	1934	1935	1936	1937	1938
Cane Plants	60,195	355,359	224,176	164,840	286,416
Onion Seedlings	40,800	60,000	74,500	204,750	114,000
Tomato Seedlings	41,250	56,100	177,150	211,350	301,054
Cabbage Seedlings	—	—	—	400	925
Egg Plant	—	—	—	650	200
Cauliflower	—	—	—	—	640
Selected Cotton Seed lb.	608	1,529	2,376	2,750	2,535
Yams, lb.	—	384	20	90	15
Seed Corn lb.	—	18	6	22	5
Peas & Beans lb.	—	5	6	11	5
Cassava Cuttings	—	—	400	70	140
Grafted Mangoes (Julie) Plants	7	2	4	2	4
Pine Apple Slips	—	—	—	—	25
Banana Slips	—	—	—	134	—

SUMMARY OF WORK PROPOSED TO BE CARRIED OUT IN 1939.

Applicable to both Settlements.

(d) The encouragement of allottees to pay more attention to the production of minor crops.

(e) The resuscitation of the onion industry is receiving immediate attention, and although Island-wide, the possibilities when considered in connection with land settlement are very encouraging.

(f) The further encouragement of allottees in the use of pen manure, and in the absence of cattle, instruction in the making of compost manure.

Applicable to Low Ground.

(g) The subdivision into allotments of 40 acres of the lower lands of Low Ground Settlement.

(h) The establishment of belts of trees on the lower lands as a means of improving the arid condition of this section.

Applicable to Hamilton.

(i) The establishment of a soil erosion demonstration plot on the high lands, and instruction to allottees on this subject.

(j) The establishment of a demonstration plot of 1½ acres on the high lands, to determine suitable and economic crop rotations for the allottees.

APPENDIX III.

Report on the Marketing of Peasants' Cotton in Nevis.

The marketing of peasants' cotton was undertaken on similar lines as in the past.

An advance at the rate of four pence per lb. was paid on all clean sea island cotton delivered at the cotton house. The total quantity of seed cotton purchased was 743,054 lb. and the amount of lint obtained from it was 210,872 lb. with an average of 28.6 per cent of lint for the season. On account of unfavourable market conditions, the crop was held on the island until November 5th when it was shipped to the British Cotton Growing Association in 424 bales.

The cotton seed from the crop was sold to Spooners Cotton Factory in St. Kitts, except a supply of the best which was kept for planting.

The Government also marketed stained cotton. An advance of ½d. per lb was paid on stained seed cotton delivered at the cotton house. The total quantity purchased was 30,076 lb. and the stained lint obtained from it was 7,923 lb. with an average of 26.2 per cent of lint.

The 1937 crop was sold towards the end of the year under review and an offer accepted for the 1938 crop. Statements of receipts and expenditure in respect of the two crops are attached.

MARKETING PEASANTS' COTTON, NEVIS.

Season 1936—37.

STATEMENT OF RECEIPTS AND EXPENDITURE.

	Receipts. £ s. d.	*Expenditure* £ s. d.
Balance to credit of a/c on 1 Jan., 1937	83 18 8½	
Expenses in cotton house		38 11 4
Fire Insurance		7 4 0
Purchase of empty bags		6 5 0
Sundry supplies		7 10 8
Porterage		28 5 6½
Truckage and cartage		4 10 6
Boatage and lighterage		27 16 8
Warehousing		6 2 6
Cess and pier dues		77 4 4½
Hand picking and purchasing of cotton seed for planting		238 1 5
Ginning and baling		244 7 5
Advances on seed cotton (clean)		4,070 1 10
Advances and expenses on stained cotton		38 12 2
Interest on advances		200 0 0
Honorarium to Agricultural Instructor		25 0 6
Sale of cotton seed to Spooners Ginnery St. Kitts	228 12 5½	
Sale of cotton seed to growers	236 18 8	
Nett proceeds of sale of 21 bales clean lint	811 0 2	
„ „ „ 102 „	3,110 0 0	
„ „ „ stained lint	46 19 7	
Debit balance	502 3 10	
	5,019 13 5	5,019 13 5

Season 1937—38.

STATEMENT OF RECEIPTS AND EXPENDITURE.

	Receipts. £ s. d.	*Expenditure* £ s. d.
Debit balance from 1936-37 crop		502 3 10
Expenses in cotton house		80 2 7
Fire Insurance		136 16 6
Empty bags		129 17 0
Sundry supplies		23 5 4
Porterage		78 10 10
Truckage and cartage		4 5 2
Boatage and lighterage		77 8 4
Warehousing		29 10 3
Cess and pier dues		274 10 8
Advances on clean seed cotton		12,384 6 3
Advances on stained cotton		62 13 2
Ginning and baling clean cotton		878 12 8
do. stained		49 10 5
Honorarium to Agric. Instr.		25 0 0
Interest on advances		306 0 0
Telegrams		7 0 0
Purchase of stained seed		16 8 6
Sale of seed cotton to Spooners Ginnery, St. Kitts	740 14 6	
do. to Growers	71 16 8	
(£57 4. 3. paid in. £14 12. 5. to be collected.)		
sundry articles	4 4 6	
Nett proceeds 424 bales clean cotton	15,567 0 0	
„ „ 15 bales stained cotton	197 11 10	
Sale of stained seed to Stonefort ginnery	44 7 6	
Bonus to growers at ½d. per lb. seed cotton		1,543 3 6
Credit balance		16 9 6
	16,625 15 0	16,625 15 0

APPENDIX IV.

GOVERNMENT GINNERY, NEVIS.

Ginning operations were started on March 1st and ceased on July 21st, 1938.

The total quantity of seed cotton ginned was 734,976 lb. of clean and 30,213 lb. of stained, which gave 210,872 lb. of clean and 7,923 lb. of stained lint. The average percentage of lint to seed was 28.6 for clean and 26.2 for stained.

The cotton seed was all disposed of before August 31st and the ginnery was thoroughly cleaned up in accordance with regulations.

The following tables show details of ginning etc.

Owner of Cotton	Seed Cotton		Lint		Bales		Average weight of bale lb.
	Clean lb.	Stained lb.	Clean lb.	Stained lb.	Clean	Stained	
Government	734,976	30,213	210,872	7,923	421	15	493

Total quantity of Lint ginned lbs.		No. of working hours	No. of gins	Average output of lint per hour	Cost of ginning operations and supplies for season
Clean	210,872	1,627	3	129.6	
Stained	7,923	104	3	76.3	£440. 18. 7.

Total receipts: £929 16. 1.

APPENDIX V.

GOVERNMENT MARKETING DEPOT, NEVIS.

The Government Marketing Depot was opened for operation on the 12th October, 1938 and the first shipment was made on the 18th October. The last shipment was made on November 28th. Only tomatoes were handled during the season and the total quantity shipped was 2,862 crates. An advance to the growers of ½d. per lb. was made on exportable tomatoes.

During the season 266 growers supplied tomatoes to the depot and the total quantity received was 70,588 lbs. of which 58,737 lbs. were exportable, giving 16.7 per cent of culls which is 9.7 per cent higher than that of last season. The increase in the percentage of culls is due to several growers who supplied tomatoes for the first time and were not experienced in methods of preliminary sorting in the field.

All the shipments were made to Canada, 600 crates being sent to Halifax and 2,262 crates to St. John. Growers received a net price of 1d. per lb.

Financial details of the season's operations are given below.

	Receipts £ s. d.	*Expenditure* £. s. d.
Net proceeds a/c sales	623 2 6	
Packing house expenses		43 19 10
Packing material, crates etc.		105 0 8
Packing house levy		23 13 2
Cold storage fees		3 9 0½
Lighterage		7 7 6
Truckage		1 11 0½
Telegrams		2 7½
Freight		167 11 5½
Advances on tomatoes		122 7 4½
Sundry supplies		9 0 11
Shipping expenses		5 19 2½
Bonus to growers		122 7 4
Carried forward to previous losses		10 12 4
	623 2 6	623 2 6

APPENDIX VI.

RAINFALL RETURN FOR ST. KITTS FOR YEAR 1938.

Station.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.	Total.
Lamberts ...	6.20	5.25	3.99	3.20	2.94	5.47	8.03	10 .35	4.56	7.99	11.53	7.24	76.75
Wingfield ...	6.29	2.71	4.06	1.51	2.31	10.24	8.98	8.49	3.64	8.50	10.85	7.44	75.02
Parsons ...	3.14	3.99	3.31	1.32	1.31	9.10	8.74	4.87	5.83	9.98	12.59	6.43	70.61
Belmont ...	3.36	1.54	4.16	0.98	2.96	10.11	8.00	6.96	4.93	10.36	10.45	5.83	69.64
Caines ...	3.56	5.03	2.80	1.23	1.41	12.22	10.11	6.81	2.32	6.22	12.25	5.45	69.41
Con Phipps ...	4.20	1.52	5.48	1.04	2.47	8.48	8.30	7.82	3.61	7.12	11.25	4.20	67.48
Belle Vue ...	3.29	2.07	3.27	0.91	0.85	9.61	8.47	6.70	2.84	10.52	11.36	5.38	65.27
Willets ...	1,99	0.55	2.50	0.57	1.41	8.15	8.73	5.35	4.83	12.75	12.39	5.14	64.36
Lodge ...	2.61	0.65	3.00	0.42	2.01	12.25	8.71	5.62	2.83	10.59	10.75	4.49	63.93
Sir Gillies ...	5.25	3 40	1.14	4.45	2.00	5.00	12.60	9.20	3.10	5.00	7.00	4.40	62.54
Brothersons ...	2.70	0.96	4.65	0.94	1.84	8.58	10.09	5.94	4.70	7.85	7.84	5.65	61.74
Stapleton ...	3.45	0.98	2.76	0.66	2.07	15.40	5.73	7.93	3.34	6.77	8.34	4.27	61.70
Pond ...	2.05	2.62	1.31	1.40	1.24	13.15	5.58	9.31	2.63	7.66	7.19	6.98	61.12
Fountain ...	2.68	1.96	2.25	0.89	1.84	6.22	11.66	8.77	3.83	6.57	8.35	5.81	60.83
Molineux ...	3.08	1.29	2.77	0.38	1.83	10.31	8.43	5.09	2.73	11.29	8.84	4.69	60.73
Mansion ...	2.85	1.25	2.60	0.65	1.75	10.75	6.40	6.15	2.75	11.30	9.00	4.00	59.45
Cranstouns ...	3.48	2.59	1.42	4.78	3.08	5.14	10.49	7.80	6.17	4.93	5.78	3.37	59.03
Shadwell ...	2.97	1.05	2.12	1.24	1.07	12.27	5.52	7.64	2.59	7.97	8.19	6.21	58.84
Stone Fort ...	4.55	1.24	2.82	1.03	1.40	9.80	6.02	7.44	3.99	7.86	6.69	5.38	58.22
Bourkes ...	5.25	2.48	4.28	0.91	2.24	8.00	7.92	7.02	2.76	5.66	6.90	4.44	57.86
La Guerite ...	2.80	1.25	1.92	1.29	1.35	10 64	6.70	7.55	2.69	8.94	6.62	6.09	57.84
Milliken ...	4.02	1.19	2.54	1.05	1.84	10.94	7.10	6.66	2.72	6.10	8.03	4.91	57.10
West Farm ...	3.33	0.85	2.23	1.10	1.19	10.41	6.85	7.98	3.60	7.47	6.56	5.24	56.81
Brighton ...	2.00	1.27	2.55	0.27	1.84	10.71	7.91	4.53	2.10	9.10	9.59	4.78	56.65
Needsmust ...	2.20	1.96	2.54	1.93	3.46	11.69	5.59	7.82	3.02	5.51	6.62	3.54	55.88
Buckleys ...	2.85	1.15	1.79	1.22	1.33	10.12	5.65	7.48	2.26	8.46	5.91	6.12	54.34
Lower Bourryeau	1.93	1.15	2.49	0.72	1.62	10.46	7.89	4.21	2.60	8.51	8.48	4.26	54.32
Camp ...	2.60	0.93	1.73	1.00	1.24	9.34	5.45	10.52	1.89	7.65	5.52	5.79	53.66
Olivees ...	2.22	0.73	1.62	1.05	1.19	10.61	5.40	6.68	2.72	8.07	7.11	5.65	53.05
Mills ...	2.60	0.98	2.51	0.82	1.27	9.50	7.72	3.78	1.97	9.31	8.19	4.34	52.99
Farm ...	4.20	3.00	1.25	2.35	1.55	4.25	8.60	6.80	3.24	4.55	6.36	4.05	50.20
Hermitage ...	1.12	1.22	2.33	0.53	2.11	10.44	7.30	3.16	1.83	6.86	8.65	4.18	49.73
St. Kitts Factory	2.90	1.20	1.55	1.11	1.22	11.07	5.10	5.85	2.06	6.05	5.69	5.24	49.04
Cunningham ...	1.68	0.61	2.18	0.24	1.98	9.73	5.69	4.44	2.33	6.17	6.31	4.04	45.40
Douglas ...	2.30	0.85	1.75	0.68	0.92	10.70	4.00	5.95	1.41	5.42	5.28	5.38	44.64
Frigate Bay ...	2.09	0.83	0.73	0.46	1.20	9.85	5.54	7.23	2.31	4.25	5.27	3.56	43.32
Canada ...	1.12	0.50	0.97	0.24	1.46	11.10	5.06	3.99	1.74	5.19	5.42	3.92	40.71

AVERAGE RAINFALL 1914—1938.

In	1914	the average	rainfall on	31	Stations was	52.92 in.
	1915	„		32	„	75.59 „
	1916	„		35	„	69.51 „
	1917	„		33	„	43.53 „
	1918	„		30	„	52.44 „
	1919	„		29	„	62.84 „
	1920	„		28	„	37.13 „
	1921	„		29	„	47.09 „
	1922	„		33	„	44.84 „
	1923	„		30	„	34.58 „
	1924	„		28	„	68.13 „
	1925	„		32	„	43.54 „
	1926	„		27	„	62.57 „
	1927	„		29	„	64.36 „
	1928	„		29	„	53.25 „
	1929	„		28	„	52.55 „
	1930	„		31	„	45.98 „
	1931	„		31	„	57.60 „
	1932	„		33	„	77.27 „
	1933	„		36	„	63.97 „
	1934	„		38	„	55.34 „
	1935	„		39	„	48.89 „
	1936	„		38	„	63.12 „
	1937	„		37	„	44.78 „
	1938	„		37	„	58.38 „

The average rainfall for 25 years is 55.20 inches, so that the rainfall for the year 1938 is 3.18 inches above the average.

AVERAGE MONTHLY RAINFALL.

	1938 Inches	1914—1938 Inches
January	3.11	3.47
February	1.70	2.03
March	2.52	2.41
April	1.20	3.53
May	1.75	3.95
June	9.78	4.21
July	7.46	5.17
August	6.75	5.54
September	3.09	6.21
October	7.69	6.71
November	8.19	7.13
December	5.09	4.57

Latitude 17° 20′ N.

Longitude 62° 45′ W.

METEOROLOGICAL REPORT FOR 1938.
AGRICULTURAL DEPARTMENT, ST. KITTS.

Heights above M.S.L. — Barometer 157 feet; Rain Gauge 152 „

Months.	Barometric Pressure reduced to Sea Level, 32° Fahrenheit and corrected for gravity.					Temperatures °F								Vapour Pressure ins. of Mercury			Relative Humidity per cent.			Inches Rainfall	No. of days on which rain fell
	9 a.m	3 p.m.	Mean	Highest	Lowest	Maximum Means	Minimum Means	Maximum Extreme	Minimum Extreme	Mean for Month	Range for Month	Dew Point 9 a.m.	Dew Point 3 p.m.	9 a.m.	3 p.m.	Mean	9 a.m.	3 p.m.	Mean		
	Inches																				
January	30.042	29.979	30.010	30.120	29.893	80.3	71.2	82	68	75.8	14	67·9	66.0	·689	·641	·665	66·7	65·0	65·8	2·80	16
February	30.068	30.003	30.035	30.132	29.933	80.0	69 5	84	67	74.8	17	63.0	64.6	·574	·597	·586	61·5	61 1	61·3	1·25	12
March	30.051	29.981	30.016	30.109	29.923	81.4	70.7	84	68	76.1	16	65.6	65.2	·633	·624	629	70·7	63·1	66·9	1·92	14
April	30.019	29.960	29 989	30.09	29.916	81.5	71.7	83	69	76.6	14	66.0	68.6	·636	·710	·673	65·8	63·7	64·7	1 29	11
May	30.006	29 957	29.981	30.135	29.819	84.6	74.8	86	72	79.7	14	70.0	70 0	·742	·742	·742	66·5	67·4	66·9	1·35	8
June	30.055	30.013	30.031	30.108	29.957	84.4	74 4	87	70	79.4	17	71.8	71.8	·798	·783	·791	75·4	68·5	71·9	10·64	15
July	30 044	30.003	30.023	30.099	29.953	84.6	75.1	87	72	79.9	15	72.6	73.0	·807	·813	·810	73·1	71·4	72·4	6·70	17
August	29.964	29.916	29.940	30.079	29.853	84.7	76.0	87	71	80.4	16	74.2	75.0	·860	·872	·866	75·3	76·2	75 7	7·55	19
September	29.976	29.920	29.948	30.055	29.854	85.9	75.4	88	71	80.7	17	73.4	73.2	·822	·825	·824	72·3	70·5	71·4	2·69	14
October	29.963	29.886	29.924	30.018	29.755	85.1	75.0	87	72	80.1	15	74.0	73.4	·819	·822	·836	73 6	72·0	72·8	8 94	16
November	29.946	29 877	29.911	30.005	29.808	82.3	†—	85	—	—	—	72.2	72.8	·792	·807	·800	76·3	75·8	76·0	6·62	22
December	29.941	29.899	29.920	30.117	29.831	81.3	—	83	—	—	—	71.0	69.4	·759	·777	·768	76·5	75·7	76·1	6·09	15
Means	30 007	29.949	29.977			83.0	73.4	85.2	70.0	78.4	15.5	70.1	70.3	·747	·751	·749	71·2	69·2	70·2	57·84	179

† Minimum Thermometer broken.

REMARKS:—Highest Maximum Temperature 88° F. on 14th and 19th September.
Lowest Minimum „ 67° F. on 10th February.
Highest Barometer (corr.) 30.132 on 14th February.
Lowest Barometer „ 29.755 on 28th October.
Greatest Rainfall in 24 hours. 5.57 inches on 28th June.

METEOROLOGICAL . RETURN.

EXPERIMENT STATION, NEVIS.

Month	Rainfall Inches	No. of days on which rain fell	Maximum fall for any one day. Inches
January	3.60	14	0.95 (31st)
February	1.71	6	1.00 (7th)
March	1.35	6	0.45 (8th)
April	1.88	8	0.55 (12th)
May	1.52	5	0.63 (25th)
June	9.34	12	3.17 (29th)
July	4.07	13	1.33 (30th)
August	7.80	15	1.95 (22nd)
September	3.84	9	1.07 (21st)
October	3.22	10	1.00 (11th)
November	12.98	16	4.75 (14th)
December	7.56	11	3.35 (5th)
Total	58.87	125	

The average rainfall for the past thirty-three years is 48.78 inches.

TEMPERATURES.

Readings of the Maximum and Minimum and the Wet and Dry Bulb thermometers are taken daily at the station at 9 a.m. and at 3 p.m.

The mean temperature for the year was 80.6° F. The mean maximum temperature was 83.9° F. and the mean minimum 70.7°. F.

The highest maximum was 91° F. on May 6th and the lowest minimum was 62° F. on February 19th.

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